

ComputerWeek

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General Motors is spending \$250 million to switch from analog communications to a three-tier digital network. Page 4.

Market share pressures give users influence over communications equipment vendors. Page 19.

CEI, Inc. unveiled an Ada-based relational DBMS. Page 37.

Uccol moved to unload its time-sharing services. Page 85.

Sperry will terminate 827 commercial manufacturing jobs at its Salt Lake City facilities, where it makes UTS 20 and other computer terminals and data communications products. The terminations, which include administrative and technical positions as well as production jobs, will not start until the end of January and will continue through the end of April, according to a Sperry spokesman at company headquarters in New York.

The terminal and communications products manufacturing will be shifted to an undetermined Sperry site in six months, depending on market demand for the products, company spokesmen said.

Now that Ashton-Tate has successfully met user demands for a multuser version of its popular dBase III, company President Ed Eber hints that a mainframe link might be next. Ashton-Tate "has a lot to learn from mainframe software companies," according to Eber, and a joint development agreement with such a company "would make good sense."

There has been a shotgun blast
See NEWS page 7

Convergent, 3Com merge

Systems house, net vendor
to plot integrated strategy

By **Maureen McNamara**

SAN JOSE, Calif. — Workstation and systems manufacturer Convergent Technologies, Inc. last week announced a \$159.6 million merger with network products vendor 3Com Corp. The move will enable the two firms to offer networked systems through the retail channel, as well as to systems integrators.

The merger, if approved by shareholders of the two corporations, offers new growth opportunities for each firm. Convergent, which manufactures products to be integrated and resold by its OEM customers, will have access to the retail outlets that 3Com has signed up. Conversely,

See CONVERGENT page 6

Crunch time for software independents

By **John Gullmet**

The year's final quarter — always a hectic time for software vendors — has taken on the importance of sudden-death overtime as many large-systems software companies struggle to shake off the effects of an industry slump.

Financial results for early 1986 indicated that the software industry would remain largely unaffected by the slowdown plaguing hardware manufacturers. Cullmet Software, Inc., for example, closed its 1985 fiscal year April 31 with an increase of more than 50% in revenue and profits. Applied Data Research, Inc.'s first-quarter revenue leaped nearly 50%, compared with the same period in 1984.

But the outlook for most segments of the software marketplace has changed drastically since spring. Analysts now contend that if financial results in the last quarter of 1985 are not strong, some vendors will be forced to take painful steps to trim costs in early 1986. Management Science America, Inc. and Oracle Corp. have already begun to trim work forces, and others may be forced to follow suit if sales do not increase dramatically.

"For the industry in general, this quarter is very important," according to Robert Grandhi, vice-president with E. F. Hutton & Co. "Unless the economy comes back very robust, there may be some trouble. If demand does not come through, software companies will have to make some hard choices. They will have to address costs, and most of the costs of a software company are people."

The short-term impact of these decreases
See CRUNCH page 10

DP nightmare hits N.Y. bank

By **Eddy Goldberg**

NEW YORK — A computer failure in the Bank of New York's government securities system may end up costing the bank more than \$4 million. As a result of the failure, the bank continued to receive Treasury notes and bonds from securities dealers but was unable to transmit them to its customers.

The computer failure at the bank, reputedly New York's largest broker of government securities, left the bank in the position of having to pay sellers, despite its inability to deliver the securities and collect from the buyers. In order to pay the sellers for the billions of dollars in securities

See DP page 7

CW EXCLUSIVE

Yankee thrif: Publisher steps down to System/38

By **John Dounoud**

PETERBOROUGH, N.H. — Like the quaint New England town where its headquarters are located, Yankee Publishing, Inc. is a company that has been growing slowly and quietly.

The company's expanding data processing requirements are due not only to the services required for the one million subscribers to the monthly Yankee magazine and two other company publications but also to the demands of seven independent publications served by the company's fulfillment operation.

Thus, it may seem strange that Yan-

kee's DP department recently reemigrated from an IBM 4300 mainframe to what technically is a smaller machine — the IBM System/38. But, according to Yankee MB director Paul Schlieben, the company was straddling the ever-changing boundary between a processing volume appropriate for a 4300-class machine and a volume fit for the smaller System/38, which itself straddles the line between mainframe and minicomputer. When the new high-end System/38s were announced a year ago [CW,

Sept. 17, 1984], Yankee was pushed decisively to the System/38 side.

Power was not the only consideration. After projecting the cost of alternatives, ranging from doing nothing to getting into an independent vendor's data base management system and high-level language tools, Yankee decided the System/38 was the best performer for its price. The microcoded System/38 relational DBMS saved Yankee the cost of getting an independent vendor's DBMS, which would have

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NEWSPAPER

NEWS

DP spending to rise in 1986, four of 10 by more than 10%

By James Connolly

NEW ORLEANS— Even at a time when four out of 10 companies are hiding their DP managers' budgets by more than 10%, another three of 10 managers will enter 1986 with budgets equal to or lower than those they had in 1985.

In addition, the average data processing budget will increase by 8% in 1986.

Those findings were among the results of a recent poll conducted by International Data Corp. (IDC), a Framingham, Mass., market research firm, at the 1985 IDC Fall Executive Conference attendees for computer DP/MIS managers, government computer users and computer vendors. The IDC survey, which drew 180 responses, addressed a variety of questions, including 1986 spending plans, the role of specific products and technologies in each manager's DP shop and trends in data center management.

One-third with no growth

"The spending results were interesting. A third of these people will have no growth or will even have a decline in their budgets for 1986. We've never seen that before. But we still had almost 20% saying they will increase their budgets by more than 15%," IDC analyst Hank Janon said.

In a separate survey conducted at the same New Orleans conference, IDC asked more detailed questions about line items in corporate DP managers' 1986 budgets. Most of those 29 managers — with 1986 budgets totaling \$4.96 billion and DP spending averaging 4.5% of corporate revenue — said their DP budgets will increase in 1986.

In the more general poll, some of the key trends included the following:

- Control of DP operations, data communications and large system selection remains centralized, although there are signs of a greater desire to make users more independent and to give them more input on application development.

- Aids and AT&T Unix were rated only "so-so" in importance, with government users giving them only slightly higher ratings than commercial users.

cial users.

- Data base machines will become vital, while relational data base management systems, data administration functions, data dictionaries and high-level, end-user query languages are considered important.

- There is a strong future for integrated voice, data and image systems, although integrated office systems are "more smoke than real value."

- There is a feeling that the IBM Token-Ring local-area network will surpass Ethernet.

- Most companies will bring in more personal computers than terminals during the next few years, and the need for more powerful standalone personal computers will peak in 1988.

- There is a feeling that AT&T may become a leader in networked computer solutions, but few managers said they feel AT&T will become a leader in computers.

- IBM's System/36 received a "so-so" rating as a departmental system, while 80% of the attendees said Apple Computer, Inc. will never be part of an office solution.

- A core of about a third of the attendees said they never will standardize on IBM's Systems Network Architecture (SNA) and LU6.2, although the overwhelming majority hope SNA and International Standards Organization (ISO) standards can be merged.

IDC's communications industry analyst Kim Myhr speculated that the functions of SNA were mostly long-time SNA critics who never recognized improvements that have been made in the architecture. He noted that most vendors of intermediate systems are moving to SNA compatibility, not to ISO compatibility.

Myhr also speculated that while feelings about the IBM Token-Ring were favorable, there would have been even more support had the survey been done before the announcement in October of the network, which doesn't support most intermediate systems.

He added that the respondents' feelings that integrated voice/data systems are critical is curious. He

1 Standardize on SNA for communications.	30%	11%	17%	4%	32%
2 Standardize on IBM LU6.2.	5%	3%	30%	13%	49%
3 Bring in more personal computers than terminals.	20%	38%	14%	14%	11%
4 Invest in networked digital office equipment.	13%	30%	45%	10%	8%
5 Apple Computer, Inc. part of office solution.	7%	2%	7%	4%	80%
6 Investment in electronic mail systems.	40%	34%	23%	4%	3%
7 Control all data through a dictionary.	4%	9%	48%	23%	20%
8 Invest in comprehensive information center.	34%	15%	23%	13%	15%
9 Completely trust a computer file system like Decad.	10%	8%	28%	22%	32%
10 Total system access for all terminals.	18%	9%	38%	20%	15%

IBM's Systems Network Architecture.
 2. IBM's Token-Ring Office Support System.

Attendees at the 1985 International Data Corp. Fall Executive Conference look at where they are headed in the next several years.

said DP/MIS managers seldom have expressed that view.

Most increases in communications

Most DP managers will increase their spending on hardware, software and communications in 1986, but growth is less sure in areas such as office automation, factory automation, services and operations, according to a poll of attendees at the recent 1985 International Data Corp. (IDC) Fall Executive Conference.

Searching for trends among a small group of corporate DP/MIS managers, IDC found that 23 of 27 plan to increase their spending in 1986, with only one expecting a budget cut.

Asked which line items are in-

creasing, 51.5% said communications, 80.8% said hardware, 73.1% said software, 66.7% said office automation, 54.2% said operations, 50% said factory automation, and 36.4% said services.

Managing costs and systems planning and acquisition were most commonly cited as key concerns among the managers.

Other concerns mentioned frequently were integrating systems, personal computer management, end-user computing and information systems strategy.

For salaries, most companies — 20 — expect to issue raises in the 5% to 9% range. However, the remaining eight managers answering that question said raises would average less than 5%.

Breaking down their spending by quarter, 38.9% of the managers said their first-quarter 1986 spending will exceed their fourth-quarter 1985 spending, while 55.6% of the managers said they expected no change.

— James Connolly

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A manufacturer of microwave equipment installed a minicomputer system and brought its time-sharing bills down to earth/48

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Vault files under Chapter 11

Renegotiating debt with major creditor

WESTLAKE VILLAGE, Calif. — Vault Corp., a leading vendor of copy-protection programs, has filed for reorganization under Chapter 11 of the Federal Bankruptcy Code to deal with \$1.2 million in debts, including some \$300,000 owed to shareholders.

Vault founder and Chairman W. Krag Brothly said that the company is still operating while in reorganization and has gone to court mainly to renegotiate a contract with its major creditor, 3M Corp. of St. Paul, Minn. Vault said that it owes about half its outstanding debt to the firm.

3M handles the duplication of disks with Vault's Prolok copy-protection scheme, which involves a key disk, fingerprinted by laser, that must be inserted to boot a protected program.

Brothly said the nearly 3-year-old company has not lost any of its major accounts but he added that the general software industry slump has affected it.

"A lot of our customers in the second and third quarters experienced their own slowdown, which left us with a humongous receivable," Brothly said. "Our business actually started picking up in the third quarter."

"We expect [bankruptcy] to be a fairly short-term thing," he said, adding that the company plans to

emerge from Chapter 11 shortly after the first of the year.

Brothly said he does not believe his company's financial problems indicate a backlash in copy protection in general, although several leading software developers have recently opted not to copy protect their products.

Vault took some criticism earlier this year when it developed Prolok Plus, a copy-protection scheme that, after several warnings, released a data-eating worm in illegal copies of programs. Prolok Plus was made available but never used, and Vault eventually shelved the product. But Brothly said developers still occasionally ask about it.

"We decided the proper approach to protection is not redistribution," Brothly said.

However, Vault competitor Softguard Systems Co. of Santa Clara, Calif., has observed some copy-protection backlash, said Joe Diodati, Softguard's vice-president of marketing.

"It's one of those things we as an industry have to realize," he said. Criticism of Vault's proposed worm program may have hurt copy protection in general, he added.

Vault has had no layoffs in its staff of about 35, but three vice-presidents left when the company filed for bankruptcy status in October.

Publisher goes to System/38

From page 1

been required for the 4300. The System/38's CPU Release 7 operating system containing the DBMS costs \$22,000, while independent vendor DBMS products typically cost more than \$100,000. And when it became clear that the increased capacity of the new System/38 Models 20 and 40 would provide for Yankee's future growth, Yankee decided it could afford to give up the IBM mainframe.

In addition, Yankee was a multi-vendor shop, using Nixdorf Computer Corp. hardware for data entry, a System/36 as a controller and 485 IBM Personal Computers or compatibles for various purposes.

"Our data was fragmented. Our major objective was to go from several different technologies and the problem of disintegrated information to an integrated environment of sharing information," Yankee's Schlieben said.

"We wanted to pull it all together into one DBMS and set of tools."

The company considered four alternatives. It could move more responsibilities onto the micros by putting the Personal Computers into a network. It could move all the work onto the 4301 using CICS, DB2/VSE and Cobol. It could bring in a DBMS on top of the IBM 4300, along with the appropriate language and implementation tools. Or it could bring in the System/38.

Until the introduction of the high-end models, the System/38 seemed unfit for the task. But Schlieben said the introductions of the new models "really told the user community that IBM is committed to System/38."

It also eliminated any concern over the machine's capacity to handle Yankee's processing needs. In Schlieben's view, "The issue of minicomputer vs. mainframe just went away."

Schlieben and Ed Phippard, general manager of fulfillment at Yankee, estimated the five-year costs of each alternative. The cost of the Personal Computer alternative was projected to be \$4.5 million; the Cobol under CICS alternative, \$5.5 million; the independent vendor high-level language and DBMS, \$4.5 million; and the System/38 alternative, \$4 million.

The overhead of the software, DBMS and high-level language posed by the independent software vendor alternative would have required Yankee to move up to a 4381 or 3030, 3080 or 3090 series machines, an additional hardware cost the company sought to avoid. But if Yankee now suddenly takes on another one million-account fulfillment job, "we could run it side by side on another 38," Schlieben said.

A most persuasive feature for Yankee was the System/38's promise of improved productivity. Productivity was a primary concern to Schlieben.

As former director of information systems at Boston University, with an IBM 3080 shop and a staff of 130 people during his tenure, Schlieben learned about the issue. "I've seen the productivity issue move at a snail's pace now for 20 years," Schlieben said. Systems programmers writing the code necessary to allow separate applications to communicate takes too much time, he added. "System/38 has made it through and had everything work."

Addressing why he considers System/38 more productive than the 4300 machine, Schlieben said, "On the 4300 side, you're working with an operating system and associated tools, the basic engine of which was developed in 1964." DB2, the 4300 operating system, "has evolved, but it's basically 1964 technology." System/38, developed in the early 1970s, "was built primarily with programmer productivity in mind."

Schlieben explained.

The company's homegrown fulfillment system, its primary application, was developed from scratch in Cobol over a five-year period. While the program executes well, its support and maintenance is labor intensive. "We wanted to move away from a typical Cobol application to a more productive environment, such as System/38's RPL-III programming language," Phippard said. Plans are to convert all existing systems to run on System/38, phase out the Nixdorf equipment and add two programmers.

Since the System/38 Model 6 with 4M bytes of main memory was installed in August, a primary concern has been training. "People have to learn more than they ever had to before with the 4361," Schlieben said. Yankee has enrolled users in a training course and has brought in a System/38 consultant. Yankee plans to upgrade to a System/38 Model 18 in the spring, a Model 20 a year later and a Model 40 in 1988.

IBM was supportive of Yankee's decision to move from 4300 to System/38, Schlieben said. Also helpful were members of Team 38, a Southern New Hampshire System/38 users group that meets monthly. Schlieben contrasted the atmosphere at System/38 and 4300 users group meetings. "At the 4300 users group meeting, you get managers who send whoever wasn't busy that day. You feel like you're in a room full of deadheads. There's no enthusiasm. At the 38 meeting, managers and decision makers are there, and you can't find a seat. There's an enthusiasm and an understanding of technology. The 38 users I talk to are more professional."

For the future, Schlieben envisions a merging of System/38 and 370 architecture. "It's not a bad thing for IBM to have competition between the Armonk, [N.Y.] old guard and the Rochester innovators," Schlieben said, referring to the respective New York and Minnesota bases of the 4300 and System/38 development teams.

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So

NEWS

DP nightmare hits N.Y. bank

From page 1

ties it had received, the bank was forced to borrow money at a 7.5% interest rate from the discount window of the Federal Reserve Bank in New York, which serves as the lender of last resort in such situations.

The failure occurred at 10 a.m. EST Thursday, and the snafu was said to be cleared up at 12:30 p.m. EST on Friday. The bank was then able to begin delivering the securities — and begin collecting its money. The loan was repaid Friday afternoon, a bank official said.

The bank is reported to have a fine reputation for its DP operations, and

the failure is an embarrassment, according to most sources.

A common practice in the government securities market is for banks receiving securities to be responsible for paying sellers upon receiving the securities. Also, buyers do not have to pay until the securities are placed in their hands, electronically or otherwise.

Largest discount window

According to Wall Street sources, the bank borrowed an amount in the \$20 billion to \$22 billion range, which, if true, would be the largest discount window borrowing ever made from the Federal Reserve Bank system.

Borrowing \$20 billion overnight could cost the bank about \$4 million to \$5 million. One Wall Street source said that computer and wire room

usually are insured against such failures, and the bank may not have to pick up the tab itself. Bank and government officials would neither confirm nor deny any of the figures.

The huge borrowing, which resulted in a surplus of cash for the sellers, is acknowledged to be a major factor in the federal funds rate's weighted daily average dropping from 5.04% on Thursday, Nov. 21, to 7.41% on Friday, Nov. 22. The federal funds rate is the cost of overnight bank-to-bank lending and is watched closely by dealers, whose day-to-day financing rates are often related to this rate. The weighted rate had stood at 7.94% on Monday, Nov. 25.

No distress

According to one source, word spread throughout the financial community that the Bank of New York's

problem was of a technical and not a financial nature, "so no one was overly excited or distressed."

There apparently were errors in the settlement of Wednesday's transactions, but the system did not break down until Thursday morning. According to published reports, a source close to the bank said the malfunction was caused by Wednesday's heavy processing load, and the software "just could not handle the volume."

A bank official confirmed that the cause of the failure was a software problem, and that the malfunction could have been caused by Wednesday's heavy load. Contrary to earlier reports, there was no new software program, but new programs were used in attempts to correct the problem. He gave no explanation for the length of the downtime.

TOP OF THE NEWS

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of speculation in the two weeks since Digital Equipment scheduled a product announcement for Wed., Dec. 4. That speculation was fired by DEC's own instructions that a Microvax III, a dyadic Microvax, an IBM-compatible personal computer, new links to IBM's Systems Network Architecture and a dyadic VAX 8600 would be announced by the end of 1985 — which leaves DEC with less than a month to introduce those products.

This week's announcement may include several products, but the only sure thing appears to be the new 8600. That system could tilt the technology seesaw back to DEC's side only two weeks after Data General took control with its Eclipse MV/20000.

Just a couple of weeks after Computer Consoles Chairman and CEO John F. Cunningham was named to the board of Apollo Computer, Cunningham returned the favor with the election of Apollo Chairman and CEO Thomas Vanderalto to the Computer Consoles board last week. The announcement coincided with the resignation of cofounder Jeffrey Tai and venture capitalist Raymond S. Livingston Jr. from the Computer Consoles board.

As a result of new ownership, Mostek Corp., a Carrollton, Texas-based semiconductor manufacturer, has rehired a total of 1,160 employees laid off last month. United Technologies Corp. sold Mostek for \$71 million to Thomson Semiconductors of France. United Technologies had laid off some 1,100 employees, and Thomson rehired 1,000 of them at the same salary and positions. In addition, the French firm rehired another 160 employees who lost their jobs in previous layoffs, for a total staff replacement of 1,160.

Along with its recent decision to freeze new Personal Computer dealerships, IBM quietly stopped hiring at its 6,600-person Entry Systems Division in Boca Raton, Fla., a spokesman confirmed last week. "IBM hasn't been immune" to the industry slowdown, the spokesman said, and the hiring freeze is a result.



NEWS

Security at heart of wrongful-termination suit

Integrity of credit union program listings at stake

By Jeffrey Beeler

ANCHORAGE, Alaska — A Superior Court jury has awarded a \$50,000 judgment to a former systems security officer who was fired by a major credit union for allegedly jeopardizing the confidentiality of an automated teller machine (ATM) network's program listings.

On Nov. 8, the wrongful-termination suit that Rod Carney filed against Alaska U.S.A. Federal Credit Union ended with a ruling in favor of the plaintiff. But although the jurors apparently accepted Carney's contention that his former employer had dismissed him with undue haste, they awarded him only a small fraction of the \$350,000 in damages demanded in his civil suit.

Carney formerly worked as a documentation analyst in charge of Alaska U.S.A.'s software security. But two years ago, he lost his job amid disclosures that he slipped copies of the ATM program listings into his briefcase and removed them from the building where they were supposed to stay at all times.

No one in the case seriously challenged the defense's claim that Carney transported the listings from Alaska U.S.A.'s data center to a nearby second building housing the insti-

tution's corporate headquarters. But the two sides remain deeply divided over the question of whether the former software security chief's actions endangered his employer's business and warranted his firing.

The credit union views the removal of its program listings as a clear-cut and grievous breach of information security guidelines that Carney himself was instrumental in instituting and enforcing, according to defense attorney Greg Motyka. Alaska U.S.A.'s internal safeguards call for the listings, which describe the layout and content of the institution's ATM software data files, to remain under constant lock and key except during use.

Carney's decision to transport the program listings from safekeeping also drew criticism from SRI International, Inc. senior consultant Don Parker, a recognized computer security authority who participated in the case as an expert witness for the defense. "This dispute underscores a point I've been trying to make for a long time — that information on paper is still far more dangerous than information stored in any computer system," Parker said during a phone interview.

But Carney and his attorney, Wayne Ross, rejected the defense's argument that removal of the program listings violated the credit union's information security policy. "How could he have breached securi-

ty when he was the one who was responsible for protecting it?" Ross asked.

Ross further defended his client's actions on the grounds that Carney had uncovered evidence of possible software copyright infringement by a credit union programmer and needed to transport the program listings to explain his suspicions to his superiors.

Carney and his former employer also differed sharply in their assessment of what might have happened had the listings fallen into the wrong hands. "The programs we're talking about are literally the interface between the credit union's computers and its ATMs," Motyka said. "In theory, this guy had the key that would have allowed someone to fraudulently shift funds among more than half of Alaska's accounts."

In addition to containing data on Alaska U.S.A.'s own 200,000 member accounts, the credit union's systems serve as the hub of a statewide network of shared ATMs belonging to nine other financial institutions.

But Ross denied the assertion that the program listings were sensitive and that their unauthorized disclosure would have seriously compromised the credit union's security. To support this, Ross cited the defense's own purported admission in court that the program listings in question corresponded to old software that had lost much of its initial value.

Corvus ousts management

SAN JOSE, Calif. — Local-area network maker Corvus Systems, Inc. underwent an abrupt turnaround last week when its board of directors voted out its top management and hired the president of a small microcomputer firm acquired by Corvus.

The board requested and received the resignations of Chairman and Chief Executive Officer Michael L. D'Addio, Executive Vice-President for Marketing and Sales Herbert J. Martin and Executive Vice-President and Chief Operating Officer Roy A. Wright.

Named president and CEO of Corvus was James L. Siehl, who held the same positions with OEMTEK, Inc., a closely held, San Jose-based vendor of computer peripherals.

Corvus simultaneously announced a stock transaction for the purchase of OEMTEK, which will operate as a wholly owned Corvus subsidiary. Corvus said it will report a loss for the second quarter ended Nov. 30.

Corvus, a local-area network market leader two years ago, had recently diversified into other products such as peripherals for IBM and Apple Computer, Inc. "The company has been rather directionless, and its management has not done the best job in the world," said analyst Aaron Goldberg of International Data Corp.

— Clinton Wilder

Only one

Third party computer maintenance company services more IBMs than anyone, except IBM.

Sorb

Convergent, 3Com merge

From page 1

3Com will have the opportunity to sell its Ethernet-based networking products to Convergent's extensive OEM base. In terms of product development, the two firms are expected to focus efforts on networked office systems.

Users of 3Com products said they were happy with the merger announcement. "Convergent is a fine company, and I'm sure it means a better opportunity to broaden the kind of products and technology that they offer," said Kathy Wilson of the Central Engineering Department at Raychem Corp. in Menlo Park, Calif.

Convergent President Paul Ely will serve as chairman and chief executive officer of the as-yet-unnamed company, and 3Com President L. William Krause will fill the role of president and chief operating officer. Both Ely and Krause are alumni of Hewlett-Packard Co. Robert Metcalfe, chairman of 3Com, will be a senior vice-president.

Twelve months ago, Bob Metcalfe and myself decided that the computer industry was growing up, and we were moving into a phase where financial strength and economies of scale were becoming more important," Krause told *Computerworld* last week. "We concluded that we would rather be the shakers than the shaken. It did make sense to have a bigger part of just part of the solution. Workstations plus networks equal the solution."

— Six-year-old Convergent was one

of the fastest growing high-technology firms of the decade, selling its workstations and minicomputers to older firms such as Burroughs Corp., but last year it lost \$13.8 million on revenue of \$561.8 million. Under Ely's direction, the company this year has shown a profit of \$4.4 million on revenue of \$296.3 million through the first nine months.

For the three months ended Sept. 30, Convergent earned \$3.7 million on approximately \$101 million in revenue. 3Com recorded a profit of \$5 million on \$96 million in sales in fiscal 1985.

Under the terms of the proposed merger, each outstanding share of 3Com stock will be exchanged for one share of Convergent stock, providing current 3Com shareholders with a total of 27% of the new company.

Indications that the companies planned to link technologies were apparent earlier this month, when 3Com announced it would provide Ethernet networking products for Convergent's Ngen modular workstations.

Financial community sources contend that the pairing of companies like Convergent and 3Com is an example of a market trend toward more infusion of hardware and data communications capabilities.

Krause acknowledged Convergent's strength in the OEM market. "They'll be able to introduce us to a whole number of OEMs that we have not been able to crack."

Convergent made headlines last month when founder Allen Michaels and three others left the company to form their own venture (CW, Nov. 4). Convergent also announced plans to acquire 40% of Barron Data Systems, a systems integrator in Oakland, Calif.

W

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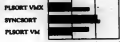
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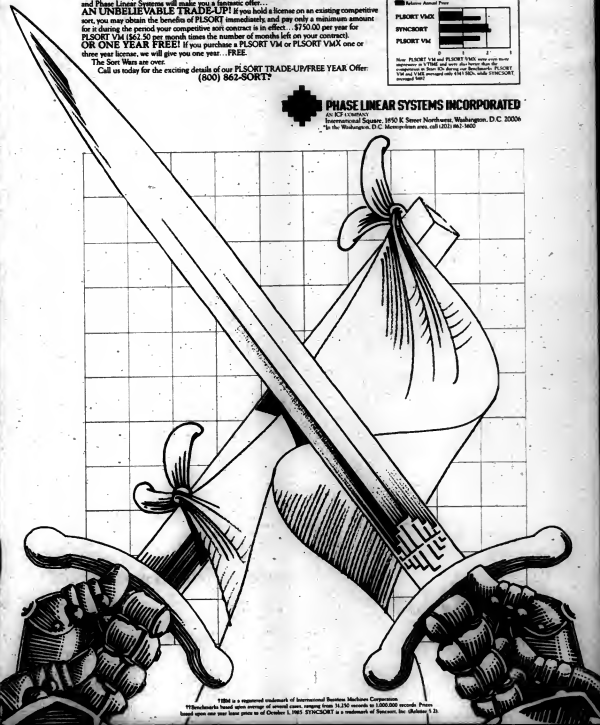


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NEWS

Man charged in IBM fraud

FBI called when payments for Personal Computer ATs missed

By Eddy Goldberg

ASHLAND, Mass. — John W. Barker Jr., 42, was arrested by the Federal Bureau of Investigation at his home recently for allegedly defrauding IBM with a contract to sell his Atlanta-based company 2,800 personal computers at a discount. He was arraigned in the U.S. District Court in Boston and released on a \$10,000 unsecured bond.

The federal indictment alleges that Barker misrepresented himself as the owner and president of HMI, Inc., a holding company that he claimed controlled several companies involved in the health care field. According to the indictment, HMI received a total of approximately 350 personal computers from IBM.

The last shipment of 187 Personal Computer ATs, delivered in May 1985, was worth an estimated \$532,000 at the 30% discount granted by IBM.

According to federal officials in Atlanta and Boston, Barker is alleged to have entered into agreements to resell the computers at full price, despite his contract with IBM prohibiting such resale.

The indictment further alleges

that Barker told IBM representatives in Atlanta that HMI owned a number of hospital and nursing centers; provided medical services for corporate accounts; had more than 1,500 physicians under contract; recorded a net income of \$15.5 million for the fiscal year ended June 30, 1984; and had branch offices in Chicago, Virginia Beach, Va., and Las Vegas.

Failed to pay IBM

The scam apparently fell apart when Barker failed to pay IBM for the computers he had received on credit.

The indictment claims that in June 1986 Barker told IBM representatives in Atlanta that HMI had a \$20 million line of credit with Citibank NA in New York withdrawn suddenly because of problems with the company's overseas investors. IBM reported the matter to the FBI, which began the investigation that led to Barker's arrest.

Barker, charged in a seven-count indictment returned by a federal grand jury in Atlanta, faces two counts of mail fraud, two counts of wire fraud and three counts of interstate transport of stolen goods.

The mail and wire fraud charges each carry a maximum penalty of \$1,000 and/or five years imprisonment, and the three counts of interstate transport of stolen goods each carry a maximum penalty of \$10,000 and/or 10 years imprisonment.

Crunch time for software vendors

From page 1

velopments on Atlanta will likely be limited to lower prices for active buyers. The long-term impact, especially should the downward trend continue, is more uncertain and could affect new product development and the availability of support services, analysts said.

One market research firm, Gartner Group, Inc., said that overall revenue growth in the mainframe software industry has slowed from 40% in 1984 to just over 30% this year. That slowdown has been particularly severe in the applications and data base management system (DBMS) markets, which Gartner Group sources said grew at only 7% through the first three quarters of 1986, compared with more than 50% growth last year.

"In the near term, I am pretty tentative about [software companies'] prospects," said Kenneth Burke, vice-president of securities research for Alex Brown & Sons. "I think we'll continue to see pretty moderate revenue growth. Whether the companies can scale back expenses to return to normal profits remains to be seen. That is very uncertain at this point."

Observers blame the software industry doldrums on a number of factors. Among them is the general state of the economy, which has led to budgetary constraints on users. Also, applications and DBMS vendors are facing increasing competition, and purchases of their products now must be approved at higher levels.

"One of the major problems in the market is higher price tags," added Brian Mutert, software analyst with Robertson, Coleman & Stephens. "People think that I have spoken to say that initial DBMS contracts have increased from \$100,000 a few years ago to \$250,000. With the capital spending crunch, that has had a significant impact."

The slowdown has also fueled very heavy price cutting on the part of vendors, observers said. According to Rick Sherlund, securities analyst with Goldman, Sachs & Co., "We hear that they are slashing prices. That price cutting will splinter off some of the strength of the quarter."

Because of their relatively lower priced offerings, systems software vendors have weathered the year fairly well. But as companies such as Uccel Corp. and Computer Associates International, Inc. move toward more expensive, integrated product lines — a strategy highlighted by Uccel's introduction of its Synova series and Computer Associates' unveiling of

the CAI-Universe system — the systems sector may begin to feel the same pressures as early as the first quarter of 1986.

"One of the best indicators of market conditions will be the performance of the utility software companies, such as Uccel" and Computer Associates, said James Mendelsohn, securities analyst of software and services with Morgan Stanley & Co. "If there is a meaningful weakening in their revenues, the slump could be deepening."

The following is how analysts assessed the year-end outlook for four of the leading independent software vendors:

■ Cullinet is unlikely to improve significantly its sluggish performance in the remaining half of its fiscal 1986 period, analysts said. The company had enjoyed 28 consecutive quarters of growth until this year. But Cullinet is said to be having trouble selling its IDMS/R DBMS into the information support or information center — segment of the DBMS market, which is said to be growing far more rapidly than the transaction processing segment. Competitors have attacked IDMS/R, which Cullinet markets as a relational DBMS, as being based on older technology. Cullinet also took some heat for delays in delivering its manufacturing applications.

■ ADR has to some extent distanced itself from the fray by being acquired by Ameritech, observers said. For the first nine months of 1986, the company reported a loss of more than \$2 million, a turnaround from a \$4.5 million profit the year earlier. Analysts lauded the capabilities of ADR's flagship Database DBMS, especially for its improved performance, but contended that the company has a severe cost-control problem. ADR has said it anticipates a strong fourth quarter, but observers claimed that unless strict cost containment is exercised, profits may not materialize.

■ MSA is not likely to rally strongly from its poor showing in the first three quarters, analysts contended, and will probably show only marginal profits for the year. MSA President William Graves said the fourth quarter this year is no more important than in the past, but recent personnel cuts seem to belie that.

■ McCormack & Dodge Corp. is insulated from public scrutiny by its Dun & Bradstreet Corp. parent. President Frank Dodge claimed that M&D is on the track toward its projected 38% to 40% revenue growth for the year. But, analysts said, the company is also struggling to cut expenses.

Contributing to this report were Computerworld staff members Charles Babcock, Rosemary Hamilton and Clinton Wilder.

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Oracle overprojects profit; lays off 14

MENLO PARK, Calif. — Overoptimistic profit projections recently forced Oracle Corp. to lay off 14 of its 360 employees. The layoffs — the first ever for the 8½-year-old Oracle — occurred within the company's development, administration and support areas, a company spokesman said.

"We overhired in certain areas," according to Ken Cohen, Oracle's director of product marketing. The

company predicted a 20% profit for the year, but profit percentages are now in the teens, he said. "We're trying to get some control in departments that were overbudget."

Oracle recorded sales of \$33.5 million for the fiscal year ended June 30. Six-month sales to date are estimated at approximately \$17 million. The company is projecting it will double its sales this year to approximately \$45 million.

ORACLE now available on the IBM System/88

MENLO PARK, CA, November 4, 1985 -- IBM will be selling and supporting the ORACLE relational database management system (DBMS) on the IBM System/88 line of fault-tolerant computers, it was announced today. ORACLE is compatible with IBM's mainframe database management systems, SQL/DS and DB2. This compatibility allows applications written for SQL/DS or DB2 to run on the System/88 under ORACLE.

Oracle Corporation President Larry Ellison said, "We are very excited about this agreement, and are 100% committed to making our relationship with IBM an enormous success. We have always worked hard to maintain compatibility with IBM's DB2 and SQL/DS products."

Oracle Corporation, founded in 1977, produces and markets the ORACLE relational database management system, fourth generation software tools and decision-support software. In 1979 Oracle introduced the first commercial SQL-language DBMS. Today ORACLE runs on a wide range of computers, including IBM mainframes, DEC, DG, HP, Stratus and most other minicomputers, and a wide variety of microcomputers, including the IBM PC/XT and PC/AT. ORACLE runs under most operating systems, such as MVS, VM/CMS, VMS and AOS, as well as UNIX and MS/DOS, and several others. The System/88 is the latest entry to the list of ORACLE-supported systems.

Oracle Corporation distributes its products through a worldwide network of 30 direct sales offices. In addition, ORACLE is sold by IBM on the System/88, and by other computer manufacturers, including Sperry, Stratus and Honeywell. Today, 39 of the top fifty multi-national corporations use ORACLE.

For further information, contact Oracle Corporation, 2710 Sand Hill Road, Menlo Park, CA 94025.

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NEWS

Micro software marketing adapts to large-corporation base

Vendors take lessons in licensing policies

By Irla Bender

"Companies like ourselves and Lotus don't empathize well with the needs of corporations," noted Fred Gibbons, president of Software Publishing Corp., in a recent interview. But, he suggested wryly, mainframe software companies have trouble developing microcomputer software capable of being used without professional help.

Both classes of software vendors offer some lessons in meeting the demands of corporate America and the needs of the computer dealers that still sell most micro software, suggested executives at several leading micro software companies in recent interviews.

In product and licensing policies, "we'll learn things from the mainframe people; they'll teach us a few old tricks," said Edward Eber, president of Ashton-Tate. But customers that clamor for site licensing — including on-site duplication — must accept that micro software is sold and serviced differently, Eber said.

"Mainframe software pricing has settled out," he said. "Our customers want to take one piece of that corporate equilibrium — site licensing — and bring it down to micros. I would be glad to take one piece of it if I could bring the rest."

'Just a smoke screen'

"Very few accounts say they want duplication rights," said Jon Shirley, president of Microsoft Corp. "We've got very good disk reproduction facilities. Why should they build their own? That's just a smoke screen to cover economics." However, Shirley underlined Microsoft's efforts to address concerns among large firms.

Microsoft's new — and not yet formally announced — corporate licensing program primarily covers volume purchases, with all sales made through the company's key dealers. Various discounts are available for total annual purchases of \$100,000, \$250,000 and \$500,000 from the company, according to Jerry Rittenbur, Microsoft's vice-president for retail operations.

Among the benefits offered by the new arrangement, if a firm establishes a solid antipiracy policy, liability for a pirated copy is limited to its suggested list price, Rittenbur said.

Like many other suppliers, "we're looking into site licensing," Software Publishing's Gibbons said. "There are some legitimate issues behind the demand for site licensing." Eber said. He listed maintenance requirements, a desire to minimize payments to retailers and worries about copy protection.

When meeting with Ashton-Tate's large-customer advisory board, "we keep talking about corporate pricing, but the biggest issue for them is copy protection," Eber remarked. "They understand why we want to do that, but they want us to put it aside."

However, "if I ever take off copy protection and let corporate users duplicate software, I will impose even greater responsibility on them for policing," Eber said.

Asked about the Association of

Data Processing Service Organizations, Inc.'s proposed hardware copy-protection scheme, Eber responded, "I don't believe in that right now. It's getting simple, and it's possible to implement, but I don't know how to get a user to pay for the box and the keys. It would be nice if the hardware manufacturers would design that into the front of the machine, but that's really not in their economic interest."

"Any form of copy protection will get in the way of a legitimate user," Eber said. "We've been very successful at inconveniencing legitimate users and very unsuccessful at discouraging illegitimate users." While everyone keeps working on this puzzle,

"no light has glowed in my room in the middle of the night," he joked.

Another major concern for leading microcomputer software vendors is massive discounting, although low street pricing has not hit them directly, Eber said.

However, "Nobody's making money on our products except ourselves" and Lotus Development Corp., he said. "That's not a good position."

"One culprit is volume purchases in the channel," with excess product ending up in the gray market, Eber said. Another is pressure from resellers that continue to try to give higher discounts. Resellers that routinely offer corporations 30% off the list price

have built an "artificial barrier, and they can't make money," he said.

Vendors, distributors and dealers now divide the margins on software under a scheme left over from an earlier time. Back then, retailers played a more active role in software sales and support and reaped higher profits, Eber commented. Eber said that if distribution channels were started today, he would give distributors a 30% to 35% margin off list prices and retailers a 15% margin — roughly the reverse of the current setup.

Long-term software industry growth will require other shifts, Eber said. The situation "suggests that we should redo our upgrade pricing," he said.

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\$55,000 to \$70,000	For these companies, many single product General Ledger sales are greater than \$100,000. Solutions offered normally require—of extra cost—many additional product utilities such as online and reporting system "modules".	

NEWS

Consultants, vendors still negative on site licensing issue

Sellers have much to lose with licenses

By Maureen McInerney

Despite the attention being given to site licensing issues these days, consultants and software vendors suggest that its time has not yet arrived.

The term site licensing refers to the arrangements a software vendor may provide to corporations making volume purchases. Those agreements can range from volume discounts on sales of 25 packages or more to the right to make unlimited copies of the software for a set price.

"I have seen this issue come up and die down three times during the past several years," said Dan Spiner, chairman of Management Information Software, Inc.

Spiner and colleague Irs Weiss of 800-Software, whose firms target large corporations, have much to lose should site licensing become the preferred method of purchase among corporate buyers. Corporate software buyers do business with firms like Management Information Software and 800-Software to keep down software costs. Widespread demand for site licensing could mean an end to large-volume buys for these firms. "Obviously, I'd prefer it if there wasn't site licensing, because if it

kicks up, our business would change radically," Weiss said.

Future Computing, Inc. President Egil Juliusen recently called site licensing "the hottest topic" in the whole software industry. But many issues need to be clarified, and companies should implement a "model plan" to answer some unanswered questions, Juliusen said.

Juliusen outlined points of a plan introduced at a recent Future Computing seminar on software distribution. Among them are the following:

- Vendors should provide volume discounts for a specified number of software copies. Unlimited site licensing "is not good for the long-term health of the industry."

- Limited software duplication rights should be put in place and based on the volume of software purchased.

- Vendors should incorporate a tracking mechanism for user compliance with the site license at the time of software update releases.

- Suppliers should turn to enforceable penalties or fines, rather than litigation, in cases of unreported duplication.

- Dealers should get credit for providing support services.

Businessland's Luther Nussbaum, vice-president of marketing, said he believes the site licensing issue will sort itself out in the next year. It may not even be the answer that companies are looking for, he said.

"When you have low-cost programs from companies like Borland International [currently marketing a \$69 program], you don't need a site licensing deal. What users really want is a lower price."

The Buyers Guide reveals some surprising truths: Products from other vendors fail to perform the most important task of all—updating automatically in real-time across all products so that the data you deal with is always current—always accurate. On top of that, they gobble up far more than their share of your precious resources. Their solution to your needs for new products was to retrofit their old products. Their older architecture, now layered with complex modifications, demands so much disk storage and memory space that they can force companies to spend millions on new hardware just to cope.

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Food stamp POS trial continues

By Mitch Korte

WASHINGTON, D.C. — An experimental program that issues food stamp benefits through point-of-sale (POS) terminals at grocery stores will continue in Reading, Pa., for two more years, officials announced recently.

Administration of the pilot program will be turned over to the Pennsylvania state government under an agreement between Gov. Richard Thornburgh and the U.S. Department of Agriculture (USDA).

For the past year in Reading, the USDA has tested the \$3 million Electronic Benefit Transfer system, which replaces paper food coupons in an effort to reduce fraud and abuse in the program (CW, Aug. 27, 1984).

Under the system, recipients' food stamp benefits are entered into an electronic account. At the grocery store, participants insert a plastic card with a magnetic stripe carrying identification data into the terminal, which debits their food stamp account and credits the grocer's bank account for the amount.

AT&T hikes rate

WASHINGTON, D.C. — AT&T Communications last week filed tariffs proposing a 7% monthly increase in its end-to-end private-line rates for business customers that would generate \$290 million to cover added costs for local service.

The proposed increase, if approved by the Federal Communications Commission, would go into effect Jan. 2.

The increase reflects the actual costs borne by AT&T for the local channel portion it obtains from local telephone companies for end-to-end private-line service, the company said.

— Bryan Wilkins

NEWS

AT&T escapes circuit waiting charge liability

FCC urges coordination of line installations

By Bryan Wilkins

WASHINGTON, D.C. — The Federal Communications Commission rejected arguments from AT&T's long-distance competitors and large private-line users that AT&T is liable for some local access charges. The charges in question are paid by the competitors and private-line users while they wait for connections to AT&T's long-distance circuits.

The FCC said AT&T is not liable under its tariffs for synchronizing installation of local phone companies'

lines with its circuits. However, the FCC said AT&T must make a more reasonable effort to coordinate installation dates under the tariffs.

The FCC said, "Although we do not here define AT&T's obligations in any particular circumstance, AT&T is obligated under its tariffs to do more than initially order the circuits. It would be reasonable in most instances that, once a local exchange carrier notifies AT&T of the availability of the local channel AT&T has ordered, AT&T should determine whether the interchange channel will also be ready."

The FCC also said AT&T at least must contact the customer or carrier requesting the long-distance circuit

and, before accepting use of the local circuit, ascertain whether the customer wants to delay acceptance for 30 days — possibly with a charge — or whether the customer wants to cancel the order, pay a termination charge and risk unavailability of a local channel upon delivery of the long-distance circuit.

The long-distance carriers and the International Communications Association said they incurred charges for unused local circuits while waiting for long-distance circuits. AT&T required these customers to sign agreements authorizing it to request local access connections and stating that the customers would be liable for the access charges upon availability.

Tax reform gets lukewarm industry help

By Keith Bothe

WASHINGTON, D.C. — The tax reform bill that emerged Nov. 23 from the U.S. House of Representatives Ways and Means Committee faces a tough battle on the House floor, but it appears to have at least lukewarm support from the computer industry.

"My initial reaction is that the committee's bill will enable us to remain supportive of the president's tax reform initiative, although we certainly did not get everything we hoped for," Ted A. Heydinger, vice-president of the Computer and Business Equipment Manufacturers Association (CBEMA), told Computerworld last week.

A formal CBEMA statement on the tax bill is expected Dec. 5.

Revealing the tax credit

While many business sectors would lose tax credits and deductions in the committee's tax bill, the computer industry and its allies engineered a revival of the expiring tax credit for research and development investments.

Led by Rep. J. J. Pickle (D-Texas), the high-technology coalition won approval for a compromise amendment that extended the R&D credit for three years but cut its percentage from 25% to 20%. Under existing law, the R&D credit will expire Dec. 31.

Pickle's compromise also ensured that R&D expenses will not be counted in the committee's proposed 25% minimum corporate tax. A committee draft of the bill had subjected R&D to the minimum tax, triggering a strong lobbying effort by CBEMA and its allies to kill that provision [CW, Oct. 7].

The committee bill would lower the top corporate income tax rate from 46% to 36%, while trimming several business tax deductions, but it would raise the maximum tax rate on capital gains from 20% to 22%. Both provisions are less favorable than President Reagan's tax proposal, which would cut the corporate rate to 33% and the capital gains rate to 17.5%.

R&D tax credit cut of 20%

The Coalition for the Advancement of Industrial Technology, which supported the Pickle amendment, said the amendment would cut the value of the R&D tax credit by 20%, an improvement over the 60% cut suggested by the committee's draft.

Coalition officials said the compromise was "the best possible tax treatment for R&D costs within the context of the Ways and Means Committee tax reform debate."

According to Joseph E. Howe, chairman of Gould, Inc. and the coalition, the favorable R&D provisions mean that some coalition members will lobby for passage of the entire tax reform proposal.

However, CBEMA's Heydinger and political analysts said that there is little enthusiasm in the full House of Representatives for the committee bill, and it is uncertain whether President Reagan will support it.

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 Computerworld
 News Service

LONDON — A survey of spending plans of some 2,000 British companies has revealed that the current explosive growth in computer use among British engineering firms will continue. The survey also indicated, however, that 40% of these firms still do not have any computer at all. The survey predicted the engineering sector will buy \$860 million worth of hardware and \$360 million of software by year-end 1985.

The survey, conducted annually by the publication *Engineering Computing*, showed that since 1983 the value of Britain's installed base of computers has grown from \$1.08 billion to \$3 billion. The survey also showed a changing pattern of spending as buyers shift from Commodore, Ltd., the dominant supplier two years ago, to IBM and its Personal Computers. Also found was a greater number of mainframes and minicomputers than in 1983.

AMSTERDAM — An independent advisory board urged the Dutch government last week to help spur supercomputer use in the Netherlands with public funding and other means. The report also recommended that current resource allocation be improved through a scheme similar to

that used by the National Science Foundation in the U.S. The panel urged the government to budget about \$1.7 million annually in 1986 and 1987 for the program.

TOKYO — Tokyo Electric Power Co.'s plan to enter the Japanese telecommunications business marked the "debut of the most formidable rival in the future." So said Nippon Telegraph and Telephone Corp. President Hisashi Ebino.

Under Tokyo Electric's plan announced earlier this month, the 41,000-employee company, Japan's largest power utility firm, would establish a subsidiary in January 1986 that would operate as what the Japanese call a Type-I carrier. The subsidiary would also own its circuits to provide the national and international

services offered by Type-II carriers, such as value-added network operators, according to Tokyo Electric President Sho Nasa.

BUSING — China's first Digital Equipment Corp. VAX-11/780 clone was introduced recently by the North China Computing Technologies Institute. The NCI-AP2701, an array processor, reportedly can be connected to a VAX-11/780 or the NCI-2760, a 1 million instructions per second machine introduced in July by the institute. In the latter configuration, processing capabilities of a 2780 supermini can reportedly be increased 10 times.

ZURICH — An international, on-line freight forwarding exchange that uses the videotex systems of the national

Postal Telephone and Telegraph authorities has been launched. The Transpostal service, established by communications companies from four European countries, permits potential business partners to access information on freight transportation services and their capacities to move freight across international borders.

CHANGSHA, China — China has announced development of its first computer for high-speed computer simulations. The YH-F1 computer, announced by the Changsha Science and Technology University, reportedly operates at 170 million instructions per second.

When connected to a supermini-computer, the YH-F1 is said to be able to simulate complex, dynamic systems.



Gil Roeder and his team can teach your whole staff to program in C for less than one seminar fee

Japan, Canada, U.S. to end tariffs

By Mitch Beths

WASHINGTON, D.C. — U.S. Trade Representative Clayton Yeutter recently announced that the U.S., Japan and Canada have agreed to eliminate their trade tariffs on computer parts.

Yeutter said the historic move would reduce costs to U.S. computer systems manufacturers by about \$172 million.

Elimination of the tariffs will reduce business operating costs for U.S. computer vendors because each imported component will cost roughly 4% less, according to Oliver Smoot, executive vice-president of the Computer and Business Equipment Manufacturers Association in the U.S.

Smoot said the lower costs could be reflected in lower prices for buyers or, more likely, in higher profit margins for selling computer firms.

Under the three-way agreement, the U.S. agreed to eliminate its 4.3% tariff on computer parts (except VDTs); Japan agreed to eliminate all tariffs on computer parts, peripherals and CPUs; and Canada agreed to eliminate tariffs on computer parts and semiconductors.

The Japanese tariff on computer parts, peripherals and CPUs varies from 3.2% to 6%. The current Canadian tariff for computer parts is 3.9%, and 6.5% for those semiconductors subject to a duty.

The elimination of duties will be implemented as soon as each government obtains the necessary legislative or executive approval.

New Video Package Trains C Programmers Fast

Students say humorous workshop skits help them remember content. Read why these techniques improve recall by 300 percent

Programmers in leading companies are learning the C language from their TV screens. Actors and mimes play the roles of functions inside the memory of a giant computer to help students learn how data are passed to subroutines. An elaborate follow-up manual simulates exercise routine to teach systems control flow.

Madness or Method?

Gil Roeder, president of Retrieval Technology Corporation, dreams up these scenes for a good reason. His customers use the C language for software development because of its power and portability, but have often hit snags getting staff up to speed. C can be hard to learn and tricky to use, and "on the job training" is slow and distracts experienced staff. Seminars and travel cut up a budget fast, and do not always deliver on promises.

But now, the All Hands On C Video Workshop gets staff up to speed in C faster, better, and at least cost than ever before.

Why It Works So Well

Roeder started his career as a teacher of Computer Science, then founded Retrieval Technology to provide quality training aids to computer users. Over the years, he and his staff have helped

thousands to master computers and software. Now they use video to teach in a friendly way that gives remarkable results.

The All Hands On C Video Workshop works so well because the focus is on people. Using proven video teaching techniques - personal presentation, animated graphics, sample programs, computer screens and dramatic scenarios - the workshop relates technical concepts to life experiences. It entertains and produces outstanding retention of subject matter.

Training When You Need It

The All Hands On C Video Workshop works when and where you need it. And students can review the package any time at no extra cost. It is ideal for self-paced individual study or for groups with a professional trainer. Trainers like it since it helps them focus on students while material is presented by the video.

The workshop contains six professionally produced video modules that teach programmers the full features and capabilities of the C language:

- Introduction and Tutorial
- Operators and Expressions
- Arrays, Strings and I/O
- Statement and Control Flow
- Functions and Variables
- Pointers and Structures

At strategic points in each module students review lesson content with the C Video Workbook exercises. And each module ends with practical programming experience on the computer using the sample programs provided. Programmers who complete the workshop can write well structured, efficient programs in standard C.

Try It Without Risk

Evaluate the All Hands On C Video Workshop in your office risk free. See why IBM, Olivetti, AT&T, Tandem, CitiCorp, ITT, Duke University, TWA, Ernst & Ernst, NEC, Bristol-Meyers, Raytheon, Abbott Labs and Honeywell use this powerful training tool. But if for any reason you are not satisfied, return it to us for a full refund. So you really can't lose. And if you act fast you can save even more with our special year-end offer. But this offer ends December 31, so don't wait. Phone in your order today.

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Retrieval Technology Corp.
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VIEWPOINT

EDITORIAL

The long march

Trade shows are not the perfect harbinger of sociocultural trends. In fact, trade shows are not the perfect harbinger of much at all. But the just-concluded Comdex/Fall '85 was markedly different from past editions of the annual industry gathering and may well serve as an indicator of a new age of corporate computing.

Call it the Age of the End User. With IBM having blessed token-ring technology, distributed computing power has migrated from a "what-if" stage to a clear and present option for corporate computer managers. Local-area networks used to be fun to talk about and dabble with, now managers can be secure in considering them as the core element in serious, big-league corporate communications strategies. Similarly, the recent proliferation of multiuser software is making other multiple-user systems a more attractive choice for departments and small offices.

All of this was very apparent at Comdex, an erstwhile hotbed of micro romance and breeding ground for Silicon Valley fever that this year was more of a communications show for corporate strategists. The common theme in exhibitors' commentary on the show was "all business," a recognition that the 1985 Comdex/Fall — held, as usual, in Las Vegas — drew fewer tire kickers, junkies and micro groupies and more serious buyers.

Especially remarkable, exhibitors agreed, was the increased attendance of corporate buyers looking for ways to meet demands from end users and top management for distributed computing power. Local-area network software and hardware, multiuser software, laser printers, new mass-storage technologies: These were the hot attractions outdrawing the stage shows in Vegas during Comdex week.

Sensitivity to end-user issues was not limited to exhibitors' floor comments. In private conversations, microcomputer industry leaders spoke candidly of their responsibility to deal more effectively with MIS/DP departments. Ashton-Tate President Ed Eber spoke of the lessons that micro software companies had to learn from mainframe software companies in terms of "how they market, how they price and how they service their customers." Persco Publishing Corp. President Fred Gibbons spoke of his mission "to sell corporate computer managers on the data processing power of the micro."

Even such resolute pioneers of the micro revolution as Apple Computer, Inc. and Microsoft Corp. are grappling directly with the reality that the business computer marketplace is user driven and not technology driven. Microsoft introduced its long-delayed (as in, announced two years ago) Windows operating environment, even while company officials were acknowledging that their marketing challenge is one of user education rather than of fulfilling existing user demand. And Apple, having forsaken the computer-for-the-rest-of-us theme and Mac Office concept, now has high hopes for its Macintosh as a desktop publishing tool, an application for which it is ideally suited.

Small steps all, but small steps in a long march. If the march's goal of distributed computing power is effectively reached and if corporate information policy becomes an effective strategic weapon, then Comdex/Fall '85 will be seen as a milestone.



LETTERS TO THE EDITOR

Easy RJE data transfer overshadowed by method's vulnerability to hackers

The in Depth article "RJE reaches for the upper hand" [CW, Sept. 30] rightly focused on RJE as an easy-to-use bulk data transfer method. However, it neglected a major problem with using RJE in micro-to-mainframe communications — security.

RJE has none of the password protection schemes that the IBM 3270 protocol supports. Nor will some of the most popular IBM mainframe security systems protect RJE transmissions. It is easy for a hacker with an RJE emulation device on a micro to bypass the host's security system and sign on to the mainframe. The hacker can then read all the data in that RJE queue and delete it.

A more sophisticated user could send altered data upstream and corrupt the corporate data base. An RJE hacker could also issue operator commands and disrupt mainframe operation without interfacing with the host's access controls.

As a user, I appreciate the ease and flexibility of RJE communications. But as a security consultant, I would not recommend RJE as a means to transfer sensitive data between IBM mainframes and micros.

Walter P. Opeksha
Certified Public Accountant
Raleigh, N.C.

Systems tampering, acts of sabotage may be products of DP/MIS stress

The editorial "The stress factor" and the Update "Managing stress in the data center" [CW, Nov. 4] were extremely well done and timely. I would add one further repercussion from job-related stress in data processing: Employees in such stressful environments often tend to compensate for the pressures with bizarre behavior such as systems tampering, file browsing, intentional introduction of random errors and other acts of fraud and sabotage.

Several years ago, I theorized that computer-related crimes and abuses by insiders were attributed to economic, egocentric, ideological or psychotic motivations.

Your research would seem to indicate that data processing and management information systems employees may be vulnerable to at least three of those motivations. If so, we may be in for more security breaches.

Jack Bologna
Assistant Professor of Management
Sierra Heights College
Adrian, Mich.

Professional organizations provide mechanism to promote social justice

Thank you for publishing the important ideas expressed in the Reader's Platform. "Information, revolution and social justice" [CW, Nov. 4]. The thoughts on social justice are well taken; however, the article neglects to point out the main stumbling block toward a commitment to social justice. Unfortunately, profits are blind to justice.

The expenses of social injustices are generally externalized by firms. Even the most ethical and idealistic of executives and managers usually find themselves in a losing battle against the bottom line where social considerations are involved.

I resigned from the Data Processing Management Association in protest of its blanket opposition to VDT legislation. Rather than fight city hall, I prefer to work through organizations like the Computer Professionals for Social Responsibility to move toward the just use of DP technology.

Daniel A. Coleman
Chapel Hill, N.C.

Vendor reinforces OSI commitment in version of systems architecture

Your readers may have been misled by the headline "Honeywell revamps net architecture" [CW, Oct. 7]. The latest release of Distributed Systems Architecture (DSA) adds new functionality and reinforces our long-established strategy of Open Systems Interconnect (OSI) support. Because DSA has been based on OSI since its initial release, our architecture does not require revamping to comply with international standards as they become finalized.

Although your article covered new DSA products and the DSA/IBM gateway, it omitted our strong statement of commitment to OSI.

Dietrich Flecher
Director
Distributed Systems Product Marketing
Honeywell, Inc.

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 - 17. Government - State/Local/Federal
 - 18. Education
 - 19. Health/Community/Consumer
 - 20. Systems/Information
 - 21. Other _____
- 12. INDUSTRY OF COMPANY
 - 22. Manufacturer of Computer
 - 23. Computer Related Systems or Peripherals
 - 24. Software Development
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 - 34. Director/Manager of Operations
 - 35. Director/Manager of Systems
 - 36. Systems Manager/Systems Analyst
 - 37. Computer Programmer/Programming
 - 38. Computer Network Analyst
 - 39. C.A.P.P. Director/Manager/Supervisor
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- A. Mainframe/Supernode
- B. Microcomputers/Small Business Computers
- C. Microcomputers/Workstations
- D. Communications Systems
- E. Office Automation Systems

4. PLEASE SPECIFY THE MAIN COMPUTER
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VIEWPOINT

Reaching the unreachable through new channels

By Amy Wohl

The computer industry is littered with technologically terrific products that never got sold. Sometimes that is a matter of engineering enthusiasm run amok. Just because your engineers think something is a state-of-the-art wonder doesn't mean that anyone wants to buy it. That is what market research, a tool unknown to many computer companies, is all about.

Sometimes it's a timing issue. Being too early with a product — before market need is established — can be worse than being too late.

But most often the problem is simpler: the product is never offered to the customer through an appropriate distribution channel.

Personal computers, the engine driving both office automation and end-user computing today, are sold to customers through a variety of distribution channels:

■ Large customers buy most of their personal computers directly from the vendor. This allows them to integrate these purchases with the rest of their computer plans and permits them to demand negotiated discounted pricing and free support at levels appropriate to their overall business level with their vendor.

■ Many customers prefer the local support or the occasional chance of free sale pricing offered by computer specialty stores. This channel is particularly important to medium- and small-size customers who lack the purchasing clout to get much atten-

tion from direct vendor sales forces that seek large orders.

■ A smaller number of customers buy hardware and software from mail-order houses and other low- or no-service sources, trading off low prices for much less support.

■ Customers who need custom software or vertical market knowledge may look to systems houses and value-added resellers that offer expertise and support, often at premium prices.

There are other choices as well. The problem is this: Large companies are served reasonably well by existing distribution channels. Smaller companies, however, have a tougher time.

Could there be other options? Walking around the floor at Comdex, the only show aimed directly at computer sellers, offers an occasion to consider the following possibilities:

One is suggested by an obvious phenomenon of this year's Comdex floor: the increasing numbers of software packages designed for specific vertical markets. We suspect that no matter how well designed these packages are, finding the right one — and a knowledgeable support source — is pretty difficult. So why not recognize this need and organize a distribution channel around it?

This channel could be made up of individual organizations, each devoted

to a specific vertical market.

Or it could consist of a much larger business, probably franchised or chain based, in which each store would have employees, systems and software for a variety of vertical markets. Here, it would be important that each vertical market be supported by one or more employees with ac-

quired expertise in the application — former shoe salespeople, common at some computer retail establishments, would not be adequate here.

Alternatively, existing computer stores could support, co-sell, own and operate by companies with expertise in a particular vertical market. In fact, the first option could fit well into this alternative.

How are such arrangements different from the services of value-added resellers? Basically, the difference is the expertise of the one offering it. Value-added resellers not only know the application, but they also know quite a lot about developing software and running a business based on software development.

The vertical marketer needs to know the application and needs to know only how to pick among several good packages in a particular vertical market and to install and customize these offerings. Also, value-added resellers are usually dedicated to a particular package for

their vertical market; these new marketers could act as consultants, helping customers choose among the offerings in a particular vertical market.

Another possibility seems to come up regularly in the business plans circulating among venture capitalists: the idea that one could build a network of experienced office equipment or computer sales representatives. Such bright and ambitious people often start computer stores or systems houses on their own but rarely have the capital resources or business skills to succeed.

These business plans have in common that the sales representatives would be agents rather than distributors or dealers. This means that they would not take title to the equipment they sell, and therefore, their needs for initial capital would be quite small.

Each sales representative could be his own boss, free to stay small or grow big — and the overall organization could grow its revenue both by adding new sales representatives and by adding new products. The sales reps could choose to run their operation out of their back pocket — or, with adequate funds, to organize a much more substantial facility.

Funding could be provided in a variety of ways: by computer companies looking for new distribution channels, particularly to smaller customers; by financial intermediaries such as leasing companies; or by investors such as venture capitalists.

Other new distribution channels are probably possible too. The key is to find new ways to reach new or currently unreachable customers at economic levels appropriate to the purchases such customers would likely make.

WOHL STREET MINIJOURNAL

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Value-added resellers not only know the application, but they also know quite a lot about developing software and running a business.

Wohl is president of Wohl Associates in Boca Raton, Fla., and editor of "The Wohl Report on End-User Computing" newsletter.

MIS mission: Market your services in-house

By Walter F. Culbre

Many data processing people associate marketing with hype, even with outright lies. The assumption is that marketing and sales are annoyances that others inflict on us, not activities engaged in by sensible corporate MIS people.

That could be a mistake, especially if the mix in your group's work load has not changed materially as your user departments have moved into new areas.

MIS in an established firm is often a monopoly. Fifteen or 20 years ago, if anybody wanted an kind of data processing done at all, they had to go to corporate MIS. No matter who MIS, a user could count on continuity.

MIS, for its part, could see to it that there was some uniformity in the way things were implemented. This was often happening behind the scenes — making sure that what accounting got was also something that

worked with the package that sales had, for example.

The MIS monopoly within the corporation gave it the control it needed to enforce integration. Users didn't question how things were done and had few, if any, options. There was no need to sell, just write up the orders.

But that was when the only computers stood around on raised floors in isolation. These days, the budgets available to individual corporate departments for data processing are often big enough to give them ideas. In some of these departments, the idea is to set up a small internal DP department with minicomputers and software bought from outside vendors. They have options. You have competition.

But even with the monopoly gone, users are still likely to come to you with the tough problems. If you have competition, then compete. To do that, you need to start actively marketing and selling your services within your own corporation.

The word "marketing" ought to

bring to mind "research," finding out who the clients are, where they are, what they need, and of course, what they can afford to spend. Then let them know that you have what they need at a price they can afford. The

function of the sales representative is both to gather information for the vendor and to impart information to the client. The conventional image of a salesperson might be as a pushy glad-hander, but it need not be. A good corporate sales rep is an ombudsman — an essential person who knows the product, the possibilities and the client's needs and can talk about them intelligently.

You have advantages in both of these areas. First of all, an internal MIS department ought to be able to find out the needs of its client departments better than anyone else. After all, even though the clients now have options on where to buy, MIS seldom has options on where to sell.

In many cases, what clients want is information in the form of advice from people, not data in the form of stacks of printout from machines.

Change the image of MIS from just a place to get data processed to a place to get management services. A good attitude to cultivate is that MIS is the place to go first for reliable opinions on DP needs.

Your sales representatives are the people who do that for you by listening to the client's problems and offering solutions. The sales rep shows the client what MIS can definitely do, can probably do and cannot do.

A good sales representative is also a good source for new design ideas or modifications. The traditional MIS approach processes requests from users as they occur; a good MIS sales representative can shed light on why a client wants a feature, how many others might want the same thing and what they are likely to ask for.

A big difference between corporate MIS and a third-party vendor is that the vendor is out to make a profit, and it doesn't forget it; on the other hand, MIS, whether it is supposed to be a profit center or not, often acts like a loss center. And yet, MIS potentially has all of the advantages in this game. Maybe it's time for the sleeping giant to wake.

Culbre is a senior associate with Nicholas DeRose Associates in Bryn Mawr, Pa.

NEWS

U.S. government begins phasing out punched-card checks

By Mitchell Weiss

WASHINGTON, D.C. — The days of the punched-card check are fast coming to an end. The U.S. Department of the Treasury recently announced plans for nationwide conversion of the familiar green perforated checks — used by the government for the last 40 years — to new multicolored paper checks.

The first major phase of the conversion will take place Dec. 3, when more than 30 million Social Security recipients will get the new check in the mail. The conversion of some 600 million checks will be completed in 1986, officials said.

"We're changing the check because the punched-card technology is

obsolete, and punched cards are no longer consistent with modern banking practices," Treasury Secretary James A. Baker said. Replacement of the old equipment cost \$5 million, but the thinner paper checks will save the government \$6 million per year in lower storage costs, Baker said.

Can you fold, spindle or mutilate the new checks? "I don't know whether you want to mutilate it, but you can fold it," said W. E. Douglas, commissioner of the Treasury's Financial Management Service.

WASHINGTON, D.C. — Common

Cause, a self-styled public interest group, has urged the Senate's Select Committee on Ethics to investigate the propriety of Sen. Ted Stevens (R-Alaska) appearing in television advertisements for

Honeywell, Inc.

Fred Wertheimer, president

of the group, said the senator's actions are an apparent conflict of interest, since Stevens is chairman of the Senate Appropriations Subcommittee on Defense and Honeywell is a major defense contractor.

In the ad, Stevens is shown in his office with Honeywell's office automation equipment but does not speak. Stevens said there was nothing

unethical or improper about his appearance, and a Honeywell spokesman said the senator's appearance did not constitute "an endorsement in the classic sense."

Stevens said he donated his \$1,000 fee to a charity fund.

WASHINGTON, D.C. — U.S. Sen. Albert Gore Jr. (D-Tenn.) continues to campaign for his bill to create a future-oriented Office of Critical Trends Analysis in the White House, despite attacks from critics of the idea.

In a published essay, a National Taxpayers Union official wrote that the move would be "a major step toward greater government control over our economy and society."

But in recent speeches, Gore has said criticism that the office would engage in centralized planning is unfounded since the office proposed by S. 1031 could not force government agencies to do anything. Gore said the office is needed to analyze technological and social trends for the president, much like Congress' Office of Technology Assessment.

One problem with executive agencies is that their computer models are all incompatible, so there can be no swapping or consolidation of forecasts, the senator noted.

Gore's bill has the support of Rep. W. J. G. (R-Ga.), who is a leader of the Conservative Opportunity Society faction of the republican party and who rarely agrees with Gore on other issues.

WASHINGTON, D.C. — Biographies and digital pictures of fugitives who appear on the Federal Bureau of Investigation's "10 Most Wanted Fugitives" list are now available on the Compuserve Information Service, from Compuserve, Inc. of Columbus, Ohio.

Compuserve and FBI officials worked together to produce the online service, hoping it will turn up some clues that will lead to the apprehension of the fugitives.

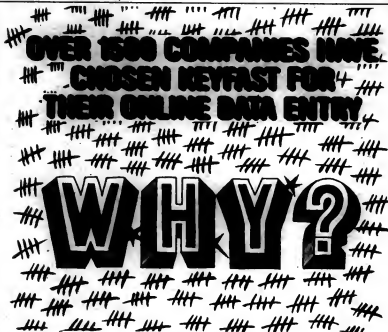
"Many of our subscribers are professionals such as doctors, lawyers and dentists. Like everyone else, the fugitives require the use of their services. In addition, many of these fugitives have distinct scars, tattoos and limps ... so alert subscribers may spot one of them," according to a Compuserve spokesman.

WASHINGTON, D.C. — The negotiations went on for about a year, but in the end, the Videotex Industry Association (VIA) and the Information Industry Association (IIA) just could not agree on a proposed merger. Consequently, the status quo remains, with the VIA representing some videotex vendors and the IIA's Videotex Division representing others.

The IIA proposed that the VIA become the IIA's Videotex Division, while the VIA proposed that IIA recognize itself as a federation of separate associations, including the VIA.

After face-to-face negotiations in Boston failed, a joint statement was issued announcing that a merger agreement could not be reached.

"The feeling was that this exchange brought the curtain down on this phase of the discussions, but the door remains open to new approaches," according to an IIA report.



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COMMUNICATIONS

AT&T to offer AccUNET T45

Targets large-volume users along fiber-optic routes

By Rosemary Hamilton

RASKING RIDGE, N.J. — AT&T filed a tariff with the Federal Communications Commission last month for a 46M bit/sec. dedicated digital communications service to be provided on its U.S. fiber-optic routes as early as January 1987.

AccUNET T45 — plans for which were originally discussed at last year's Telecommunications Association conference in San Diego — will be marketed to large businesses, government agencies and other telecommunications companies.

The 46M bit/sec. service conforms to the T3 telecommunications industry standard and uses the DS3 signal interface. It can support 672 digitized voice channels or an equal number of 56K bit/sec. digital data channels. The capacity is equivalent to 28 T1 1.54M bit/sec. digital links and can, in fact, be used in trunk applications to support that many T1 spans.

A "small to medium-size company is not really going to be interested" in Acc-

UNET T45, a company spokesman said. "It's aimed at very large volume data users." A number of customers have reportedly approached the company about such a high-capacity service, but the spokesman would not specify which customers or what industries have shown strong interest.

AT&T's fiber-optic network used to support the new leased service should extend more than 4,600 miles by year's end. By 1988 it is expected to stretch more than 10,000 miles and connect approximately 120 major cities, according to John Smart, vice-president of business markets and services at AT&T Communications, the AT&T unit in charge of long-distance and international services.

Initially, however, T45 will only be available in three major areas, including major cities along the company's Northeast Boston-to-Richmond, Va., fiber-optic route; major cities in California; and the Dallas-Fort Worth, Texas area.

Customer access to the service must be arranged through local telephone companies. Few of these companies, however, have service offerings or the capacity to

See AT&T page 26

INSIDE

Timeplex and Phio both unveil multiplexers that support voice and data/23

NEW THIS WEEK

- Wizard Computer Products introduces protocol converters
- Telenetics adds two to its Expressdata modem line

■ For more on these and other new products, see pp. 71-92.

INSTANT ANALYSIS

"Users can no longer afford to let carriers and the Federal Communications Commission determine terms. They have to take an active role in the rate-setting process."

— John S. Lincoln, Santa Fe International Corp., speaking at the 1986 International Sales Corp. Fall Executive Conference



DATA STREAM
John De
John De

'Value added' the net byword

While retail outlets are an important channel of distribution for vendors of personal computer local networks, many manufacturers rely primarily on value-added resellers and distributors plus more traditional end-user sales.

The "box-pushing retail computer store" is disappearing, according to one network vendor. "Value added" is now the byword.

There are two types of companies in the value-added category: value-added resellers and value-added distributors. As their name implies, resellers buy local networks, enhance the products — typically through software tailored to a certain application — and resell the networks directly to end users.

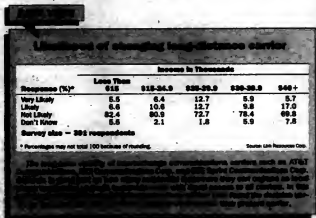
Value-added distributors also enhance net products but sell them to computer stores and sometimes to end users and small resellers. Distributors maintain warehouses of products and often provide local product support. Vendor products sold to distributors may have very well end up on retailers' shelves.

A quick survey of three network vendors at the recent Comdex/Fall '86 show in Las Vegas uncovered an interesting disparity in the manner micro network vendors hawk their products.

Corvus Systems, Inc. of San Jose, Calif., for example, does 40% to 45% of its business through retail outlets, according to William A. Lanfri, director of marketing. Another 30% to 35% of its business is through value-added resellers and distributors. A few major accounts make up the remaining 15% to 20% of its business.

By comparison, between 85% and 90% of Nstar Systems, Inc.'s revenue

See VALUE page 26



Increased market pressure can work to users' advantage

Vendors must adjust to shifting environment

By Paul Kozminski

NEW ORLEANS — Recent shifts in the communications equipment market have squeezed vendors and given users the chance to influence product direction and design.

Vendors are trying to increase profits while juggling dynamic market forces that include longer selling cycles, distribution wars, loss of end contact and slimmer margins, according to Kim Myhre, director of communications research at International Data Corp. (IDC), a Framingham, Mass., market research firm.

Myhre, speaking at IDC's confer-

ence called "MSB Management Issues and Strategies: Sharpening Your Company's Competitive Weapons," said the industry turmoil can benefit users, such as in the formation of standards. He noted, "For the first time, we are seeing standards developed before products."

Communications vendors are experiencing difficulty maintaining market share and increasing their profits. "The economics of the industry are rapidly changing, and a number of companies are not equipped to cope with these changes," Myhre said.

Besides coping with industry change, vendors must deal with changes in user environments. For example, some companies have given their MSB department control over

telecommunications functions. Consequently, communications vendors may have to call on strangers rather than on established customers.

"Manufacturers of private branch exchanges claim there is now an 18-month selling period," Myhre noted. The delays stem from questions MSB asks concerning PBX data support. In addition, distribution concerns are hobbling the market. "Companies no longer know who they are selling to," Myhre said. He presented Micom Systems, Inc., a Chatsworth, Calif., manufacturer, as an example. "Micom used to dominate the low-and-dial switch market through its direct sales force," he said. "The company has now lost touch with its customers because too much of its products are sold by distributors."

Micom's distribution problems are the rule rather than the exception, according to Myhre. Vendors often step on their own toes. "I had an IBM salesman, a [Rolm Corp.] salesman and a Rolm distributor all trying to sell me a Rolm PBX," noted IDC analyst Lou Sandow, director of corporate telecommunications at McDermott, Inc. in New Orleans. "I told them I was only going to evaluate one offer, and it was up to them to decide what that offer would be."

Distribution confusion has caused price cuts. "Once a company employs multiple lines of distribution, it can no longer set prices because distributors will cut their margins to keep their sales," Myhre said. Users benefit, but vendors' profits are squeezed.

See MARKET page 26

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COMMUNICATIONS

Timeplex, Phalo unveil muxes for digital, intracompany use

Voice/data units boast high-speed digital, fiber-optic capabilities

By John Ditz

Two multiplexers that support voice and data were unveiled recently, one from Timeplex, Inc. — intended for use with high-speed digital communications facilities — and the other, a fiber-optic unit for intracompany use, from Phalo Corp.

Timeplex of Woodcliff Lake, N.J., unveiled the Voplexer 56/64K BPS Voice Data Multiplexer at the recent Communications Managers Association conference in Uniondale, N.Y.

The time-division multiplexer can squeeze one voice channel and up to seven synchronous data channels operating at speeds up to 19.2K bit/sec. over a single 56K or 64K bit/sec. digital link.

Voice is digitized using continuously variable slope, delta modulation at 26K bit/sec. or 32K bit/sec., leaving at least half of the link's capacity for data transmission.

Two types of circuits

The multiplexer can be used on point-to-point circuits or as a voice/data tail circuit feeding a T1 network. In the latter application a remote location could be linked to a T1 access point over a 64K bit/sec. circuit and then incorporated into the 1.54M bit/sec. facility and routed accordingly.

Users can thus provide integrated voice/data support to remote locations using incremental 64K bit/sec. digital links, reducing the need for parallel voice and data leased circuits.

Voplexer supports four or seven synchronous data ports and an optional port to connect to a private branch exchange. Users select the port configuration at the time of purchase.

The unit can reportedly be upgraded to its full complement of ports by replacing a four-port data module with a seven-port version, with or without a voice port. A combination Digital Service Unit/Outbound Service Unit is available as an integral option to interface the multiplexer with digital networks.

The device is programmed using prompts and a menu structure and indicates when parameters entered are not compatible with the network. A statistics selection on the main menu is said to provide the operator with link statistics, port statistics, function status and link status for local and remote units.

Parameters for two alternate configurations can be maintained to accommodate net changes by time of day or for special events, the company reported.

Users can also create yet another network configuration off-line on a so-called scratch or editing data base. This enables users to experiment with an alternative network configuration, and, when needed, download it for actual use to either the primary configuration data base or the secondary, time-of-day/special-event configuration data base.

Diagnostics supported by the device include internal and external

loopback and local and remote system tests. The multiplexer has a built-in test pattern generator/detector to test data paths.

Available in January, Voplexer costs \$2,195.

Phalo's 9600 series

Phalo of Simi Valley, Calif., recently announced a voice option to its fiber-optic 9600 series, a time-division asynchronous/synchronous multiplexer.

Voice support on the 9600 is achieved with the addition of voice channel option modules, but this is usually at the expense of data support.

Modules come with eight or 16 ports, and two of each are required to reach the multiplexer's maximum of 48 voice channels.

The 9600 multiplexer normally supports 24 channels of data at 19.2K bit/sec., or 48 channels at 9.6K bit/sec. or up to 64 channels at 7.2K bit/sec. The multiplexer can support roughly four or five 9.6K bit/sec. data channels if only one voice channel is needed, a company spokesman said.

A single eight-port voice module will, however, eliminate the ability to support any data channels.

In practice the 9600 multiplexer outfitted for voice can be used to connect a private branch exchange with another switch or up to 48 remote telephones over a single fiber-optic cable pair. This eliminates the need to run 48 separate wires between locations.

A proprietary code is used to translate electrical voice signals into an optical signal, which the company said is different from typical voice digitization schemes. Typical of fiber-optic communications, the system is secure from eavesdropping and monitoring.

Telephones are connected to the device through RJ-11 telephone jacks.

The multiplexer is said to terminate calls automatically when either party hangs up or after 60 seconds of silence, a time period that is factory

adjustable.

A 9600 multiplexer equipped with the voice channel option sells for \$8,895, or \$17,390 per pair.



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SOFTWARE & SERVICES

Software slump takes its toll

Tough times for data base, applications vendors

By John Gallant

STAMFORD, Conn. — The slowdown in the computer industry has exacted a heavy toll on large systems software vendors. According to a leading market research firm, the growth rate of the IBM mainframe software market was sliced nearly in half this year, with independent applications and data base management system vendors bearing the brunt of the slump's effect.

During the Gartner Group, Inc.'s recent Software Management Strategies conference, analysts said that growth in the mainframe software industry is expected to be only 25% for 1986 — a drastic decline from the 40% growth the industry enjoyed in 1984. Scott Smith, vice-president of Gartner Securities Corp., said the worldwide revenue of U.S.-based companies that provide mainframe software, including IBM, is expected to grow from \$5.3 billion in 1984 to \$6.5 billion this year.

The slowdown has been particularly sobering for independent applications and DBMS vendors, Smith said. A recent Gartner Group study showed that, for the first nine months of 1985, the revenue of independent applications and DBMS vendors increased only 7% over third-quarter 1984 results. In contrast, at the end of the third quarter of last year, revenue for the same vendors leaped more than 50% over the similar period in 1983.

The third-quarter figures were even more dismal than the results of the Gartner Group's mid-year research, which showed revenue growth of roughly 14% compared with the first half of 1984. The firm's research has been corroborated by the financial performance to date of leading DBMS and applications vendors like Applied Data Research, Inc., Cullinet Software, Inc. and Management Science America, Inc.

See SOFTWARE page 30

CRI Ada-based DBMS unveiled

By John Gallant

SANTA CLARA, Calif. — CRI, Inc. has introduced what it claims is the first Ada-based relational data base management system.

Paul Fuller, vice-president of CRI, said the company's Relate/3000 was originally developed in 1981 for Hewlett-Packard Co.'s HP 3000 series processors and has been completely rewritten in Ada. He said Relate/3000 will eventually be compatible with any computer system supporting an Ada compiler.

Fuller said CRI has already validated the porting of the system from a Digital Equipment Corp. VAX processor to a Data General Corp. processor. The system's portability, which is made possible by the strict Ada standards enforced by the Department of Defense, will allow users to

See CRI page 30

Much ado about net management

At a forum on network management at the recent Gartner Group, Inc. Software Management Strategies conference, panelists agreed that IBM has not provided the proper tools for the network management job. But they also emphasized that it may be impossible for any one vendor to support the increasingly complex task of maintaining networks.

"I have a real problem talking about the network," said Eric Birkeland, director of communications product marketing at NCR Comten, Inc. "In most large organizations, there are a

See SOFTWARE page 32



SOFTWARE
Steven Pharesinger

Building unfit systems faster

The use of productivity tools for applications development has become a hot subject. Nearly every major DP organization has either acquired or is considering the acquisition of such tools. These tools generally fall into two categories: application generators for the programmer-oriented development center and fourth-generation languages for the user-oriented information center.

Both application generators and fourth-generation languages provide major improvements over traditional development methods. But one major issue remains to be solved — how will new applications be designed and documented?

The design and documentation issue remains important because our industry continues to neglect this vital phase of the development life cycle. Just as a builder would never construct a home without a thorough architectural plan, a DP professional should never construct an application without a thorough and well-documented design.

Without the design phase, it is possible that productivity tools for development are merely allowing users to build the wrong systems faster.

This issue is not a new one, but many DP organizations have yet to face up to it. While structured design methods appear very popular, one has to wonder

See BUILDING page 32

Pharesinger is president of IMS Consulting, Inc., an Elmhurst, Calif.-based firm that specializes in IBM's IMS DB/DC and CICS/DTL/1. He has 15 years of data processing experience and is a regular contributor to Software.

INSIDE

Nastec widens its CASE 2000 product line/28

NEW THIS WEEK

- IBM introduces CICS/OS/VS Performance Analysis Reporting System
- Tommy announces its Mach 1 applications generator

■ For more on these and other new products, see pp. 71-92.

INSTANT ANALYSIS

"I'm not sure users would know what to do with distributed data bases. They haven't figured out today's data bases yet. The ability to organize data is very limited."

— H. Michael Brandt, of the Gartner Group's Software Management Strategies Service, on the rumored introduction by IBM of a distributed DBMS.

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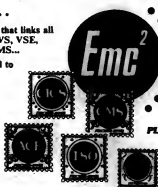
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SOFTWARE & SERVICES

Nastec announces expansion of CASE 2000 product line

Communication, control, design software debuts

By John Heston

SOUTHFIELD, Mich. — Nastec Corp. has widened its Computer-Aided Software Engineering (CASE) 2000 product line.

A spokeswoman for Nastec told Computerworld that the company has unveiled Hostlink, a communications product that supports information sharing among the company's microcomputer packages through the facilities of a mainframe host, an IBM Personal Computer version of its Lifecycle Manager planning and control system and an enhanced release of its design and documentation tool, Designaid.

Nastec's Hostlink communications software reportedly allows users of the CASE

details standards and procedures, file management capabilities and documentation aids.

Defines project scope

The system also helps project managers define a project and its scope, identify project tasks, estimate resource requirements, assign and track tasks and review

work in progress.

The spokeswoman said Lifecycle Manager automates all commercial development methodologies and custom in-house standards and procedures.

The Lifecycle Manager tool costs approximately \$2,000 per micro. The product is also available for Convergent Technologies, Inc.

IWS workstations.

Enhancements featured in Designaid Release 3.5 include an upgraded set of menus to lead users through the creation and validation of programs and design specifications and upgraded graphics capabilities. The system's design dictionary now includes a user sign-on facility for improved security and a selec-

tive load and unload system for data transfer between dictionaries, Nastec said.

The Designaid development tool is priced at \$6,900 per micro.

The spokeswoman said both Designaid and Lifecycle Manager will be compatible with the IBM Token-Ring local-area network as well as the PC Network.

99

Both Designaid and Lifecycle Manager will be compatible with the IBM Token-Ring local-area network as well as the PC Network.

2000 IBM Personal Computer application development system to share data through an IBM mainframe host. Through IBM's TSO teleprocessing monitor, users can transfer Designaid design dictionaries, Lifecycle Manager development data bases and deliverable files between IBM Personal Computers and the mainframe, the vendor said.

Supports info sharing

The spokeswoman said the facility supports information sharing among development project teams and allows users of Nastec's micro software to take advantage of the mainframe's storage and backup capabilities.

Hostlink is scheduled to be available in the first quarter of 1986 at a cost of \$10,000 for the host and \$100 per personal computer workstation.

Lifecycle Manager for the IBM Personal Computer supports structured design tools for a design analyst and provides planning and control capabilities for the project manager.

The product features a menu of current assignments and one click, direct access to the Designaid system for creating and validating deliverables, a help facility that

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SOFTWARE & SERVICES

DEC, Alsys introduce Ada-related products at conference

Compiler versions among software offerings unveiled

By John Galtant

BOSTON — Alsys, Inc. and Digital Equipment Corp. were among the vendors announcing Ada-related prod-

ucts at the Association for Computing Machinery's recent Special Interest Group on Ada conference in Boston.

DEC unveiled a real-time Ada applications development environment, dubbed Vaxel Ada, for its VAX processors. A spokesman said the system allows users to develop, debug and run Ada-based real-time applications

on VAX systems.

Scheduled for spring availability at a cost of between \$1,500 to \$11,250, Vaxel Ada features a high-level, fully symbolic remote debugging facility and DEC's Vaxel Toolkit of programming aids. The spokesman said programs are created for execution on Vaxel systems by using the company's VAX

Ada compiler on a host system.

Supports target processors

Once developed, the program can be sent via Ethernet or DEC's Decnet to target processors. The choice of target system can be made after the application is linked, so applications can be developed that run on either the

Vaxel system or DEC's VAX/VMS operating system.

Vaxel Ada supports the full VAX family of processors. It has been approved by the U.S. Ada Validation Office.

Alsys introduced four newly validated Ada compiler versions, bringing to 16 the number of validated compilers offered by the Waltham, Mass.-based company.

The firm also announced an Ada-related computer-aided instruction (CAI) course and two Ada programming tools.

Alsys compilers were announced for Hewlett-Packard

99

Vaxel Ada allows users to develop, debug and run Ada-based real-time applications on VAX systems.

Co.'s HP 9000 Series 200; Apollo Computer, Inc. Domain systems; Sun Microsystems, Inc. workstations; and DEC's VAX line. The VAX compiler cross-compiles to an Altos Computer Systems, Inc. AC8 68000. The four products were validated by the U.S. Department of Defense in October.

The Sun and Apollo compilers are priced at \$5,000, and the VAX-to-Aitos cross-compiler costs \$18,570. Pricing for the HP 9000 compiler, which will be sold by HP, has not been determined.

Adaquery gets manual on-line

Alsys' Adaquery tool puts the entire official American National Standards Institute *Standard Ada Reference Manual* on a computer for rapid reference. Users reportedly can search Adaquery using key words to pinpoint reference material. It runs under IBM's PC-DOS and Microsoft Corp.'s MSDOS and is priced at \$500.

A spokesman said Adaquery is a tool designed to ease the maintenance of Ada programs. It allows a user to move quickly through program sections, supports cross-referencing through windowing capabilities and provides simultaneous views of different compilation units or two different levels of detail within the same compilation unit. Adaquery has not yet been priced, the spokesman said, but it will cost less than \$1,500.

Finally, Alsys' CAI course, "You know Fortran — Ada is simple," teaches Ada programming skills by demonstrating similarities to Fortran. It runs on the IBM Personal Computer and is priced at \$1,620.

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SOFTWARE & SERVICES

Software slump takes its toll

From page 27

Independent systems software vendors actually improved their financial performance slightly. Smith said the Gartner Group's mid-year research indicated that revenue increased more than 27% for the first half of 1985, compared with the same period last year. In the first six months of 1984, systems software revenue increased by nearly 25% over that of 1983. The relative growth enjoyed by systems software vendors was primarily due to the lower cost of the packages, he said.

Compared with the independent software vendors, IBM fared consid-

erably better this year. While independent vendors' revenue growth for 1985 is expected to be only 16% — compared with 41% growth in 1984 — Big Blue's software revenue growth was nearly double that of 1985. IBM's 29% 1984 revenue growth figure was, however, a substantial decline from the 36% growth rate it enjoyed last year.

Smith said IBM's software revenue for 1985 is expected to total \$4.1 bil-

lion. That figure represents only about 8% of IBM's total revenue, but software was clearly the fastest growing segment of IBM's revenue picture in 1985.

"IBM had a better year than the independent software vendors primarily due to its large base of rental customers," Smith said. "If IBM values its software prices by 10%, it essentially increases its software revenue by the same amount."

Breaking down IBM's software revenue, Smith said the company's combined applications and DBMS revenue is expected to grow at little more than 16% in 1985, compared with a growth rate of more than 24% in 1984. IBM's systems software revenue will grow more than 37% this year, a decline from 1984's growth rate of nearly 60%.

Smith blamed the flagging software industry growth rate this year on four key factors:

■ The state of the general economy and the impact of budgetary constraints.

■ Problems in the delivery or installation of certain "key" products, such as Callinet's manufacturing applications and Hogan Systems, Inc.'s large-scale banking systems. Smith said the problems "scared other users" from investing in high-ticket software systems.

■ The dearth of important products announced in 1985. "This was a year for delivering on yesterday's promises," Smith said. "Few vendors made new promises this year."

■ Increasing competition in nearly all sectors, a factor that increased the time involved in user purchases.

Smith said the Gartner Group's research indicates that revenue growth will pick up some steam in 1986, though a return to the boom years' performance of 1983 and 1984 is unlikely. The firm predicted that the IBM mainframe software market will grow by 27% in 1986.

"Users can only postpone decisions for so long," Smith said. "Also, the benefits of earlier investments in software will begin to become apparent. Those users who invested in systems like Callinet's manufacturing packages and Hogan's banking applications will start to enjoy the benefits, and other users will see that. New products announced next year, such as expert systems, will also spur sales."

With Keyword, word processors will tango. Not tangle.



Getting incompatible word processing systems to dance to the same tune is easy when you know the steps.

Step One: You'll need our new modular KEYWORD 7000 system. With it, documents can be interchanged between incompatible dedicated or PC-based systems in letter-perfect order in just minutes. Across the hall, across town or around the world. It's a compact hardware/software solution available as a one, two, three or four-drive unit. And any configuration you choose will translate documents in fully reversible form without operator cleanup.

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CRI Ada-based DBMS unveiled

From page 27

transfer a data base to any system with an Ada compiler.

Relate/3000, scheduled for first-quarter availability, features an applications development tool known as Application Builder. Fuller described Application Builder as a development language that uses high-level commands to access Relate/3000 commands and constructs, defining screen layouts with page images stored in the application file. It also offers an on-line debugging facility and a data dictionary dubbed Dataguide.

Fuller said Relate/3000 will be priced between \$18,500 and \$43,500, depending on the host system.

CRI also unveiled its ProjectAlert project management system, which works with Relate/3000. ProjectAlert was also rewritten in Ada. The system supports basic planning, scheduling and resource allocation functions and allows users to enter data via menus. It features a variety of reports and color graphics capabilities, supports cost and labor tracking, exception reporting and a network library. It is priced between \$21,000 and \$44,000.

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Look at what's out there now. You'll see that the Masterpiece series is indeed a fresh approach in financial software. Not only does Masterpiece bring new meaning to concepts such as "modularity" and "borderless integration," it brings new power to such fundamental financial applications as General Ledger, Accounts Payable, Purchase Order, Accounts Receivable, and Fixed Assets Management.

Whether you manage financial information or use financial information, we encourage you to arrange for a Masterpiece demonstration or simply ask for more information. Clip the coupon below or call toll-free 1-800-343-4133 (in Massachusetts, call 1-800-322-0491).



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masterpiece

SOFTWARE & SERVICES

Building unfit systems faster

From page 27

whether they are really being used. Most systems analysts responsible for designing applications will say they rely on structured design methodologies. But many programmers have said they write only structured code. It is common knowledge how little truth there is in that answer.

That is the bad news. Now for the good news. There are productivity tools available for the systems analyst and systems designer that will assist in the structured design process and that will create and maintain quality documentation as well.

These tools are known as comput-

er-aided design or analysts' workbench tools. They usually support structured system design methodologies that include either the process-driven or data-driven approach or both. They keep the entire design in a machine-readable format to ensure a consistent and rigorous design that includes automatic validation of many of the aspects of the design process.

Project control, component standardization and maintenance issues are also addressed. Excelerator, from Index Technology Corp., is an example in this category of productivity tools.

Taking a simplistic view of the entire development life cycle for the sake of example, one would have something like this: 1) logical design, for example, user requirement and data modeling; 2) physical design,

for example, external and internal specifications; 3) programming; and 4) maintenance. In this discussion, testing is included in the programming phase and implementation is excluded.

Addressing programming, maintenance

The current productivity tools for development address the programming and maintenance phases as well as some portion of the physical design phase through their prototyping and high-speed analysis features.

The productivity tools for design address both the logical and physical design phases and generate selected program code, such as screen definitions, data base and screen I/O areas, through their limited code-generation capabilities.

These code-generation capabilities are likely to expand dramatically in

the future as vendors attempt to merge all aspects of design, development and documentation into a single product.

When this occurs, the so-called fifth generation of languages may become a reality, and program code will be automatically generated from design specifications.

Degree of overlap

Currently, there is a degree of overlap between these separate design and development tools, but it is acceptable depending on the application being built.

The larger, more complex systems will usually need the comprehensive design tools while the smaller, less complex systems are able to use the prototyping features of productivity tools for development.

The systems that fit somewhere between the large and small categories could use either tool.

Individual organizations may dictate which tools will be used in specific situations, depending on their preference for formal, structured design methodologies or prototyping with high-speed analysis.

The bottom line is that in most DP organizations there is adequate need and justification to acquire productivity tools for both design and development.

Softscope: Behind the doldrums

From page 27

number of networks, each of which is independent for some very good reason. The problem we should be addressing is what to do with a variety of networks."

What's behind the doldrums in the large system software industry? Well, said H. Michael Braude, vice-president and director of the Gartner Group's Software Management Strategies Service, "It's a function of the nonusability of software and slow applications development. It will be hard to escape the doldrums unless that changes."

"Many [users] are reluctant to invest in software," he added, "because they don't know where its going or whether you can port it to new environments. That is especially true in the DBMS market where there are no standards and users don't know where the technology is moving."

Braude said IBM is getting closer to announcing its rumored R-Star distributed DBMS. He said IBM has moved R-Star, reportedly in the works at an IBM facility in San Jose, Calif., from the realm of research into that of development this year.

Product differentiation may hold the key to whether DBMS vendors survive the decade, according to Scott Smith, vice-president of Gartner Securities Corp. Smith said the increasingly competitive DBMS market, where vendors like Callinet Software, Inc., Applied Data Research, Inc., Software A.G., Citicorp Systems, Inc. and Computer Corporation of America are all slugging it out, may see a shakeout before 1990. In fact, Ameritech's acquisition of ADR may be the first sign of such consolidation in the market.

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**Straight talk about
software companies.**

"When you buy a computer software product, you're buying the company behind it."

When Cullinet Software was founded in 1968, it was one of the first companies created to specialize exclusively in computer software products. We felt it was time to stop re-inventing the computer software wheel.

But remember, this was 1968—the era of hardware myopia. There were some who said we could never succeed.

Others had tried and failed. "Why," it was asked, "would Cullinet succeed?"

First, we had the belief that there is no substitute for superior products. When Cullinet introduced IDMS, it pioneered the concept of integration via an active dictionary-driven database management system. And we've achieved many other technical firsts since then:

The first back-end database machine prototype and distributed database system; the first, and only, tele-processing monitor built for IBM computers in the last ten years; the first online Applications Development System (ADS/OnLine) for complex, high-volume applications; the first, and only, 4th-Generation Applications Software; the first transparent integration of personal computers with mainframe systems; the first implementation and full integration of database, applications, and information center/PC software; and much more.



More importantly, we also brought to the industry a standard of excellence and financial maturity. And a financial stability that is a matter of public record. A stability that enabled us to become the first computer software products company to be listed on the New York Stock Exchange, and to be cited for many of our achievements in growth and management by leaders from the business and financial communities.

As proud as we are of all these accomplishments, however, we are proudest of the special relationship that exists between ourselves and our customers. Cullinet has brought to the software industry a characteristic common to all successful companies: we are "user-driven." We understand clearly that we are in business

to serve the needs of our customers. And this understanding shapes everything we do.

It is this emphasis on customer requirements and satisfaction that has resulted—year after year, in survey after survey—in Cullinet's top ranking in the categories of vendor support, documentation, training, and overall user satisfaction.

We have built an uncommon loyalty among our users because they understand that we truly care about them. It's that simple.

John J. Cullinane
Chairman of the Board

These are five of the reasons why Cullinet is the leader and most respected company in the computer software industry.

1. Number One in Industry Sales

INDEPENDENT SOFTWARE VENDORS Software News' Top 50 Independent Software Vendors

CULLINET SOFTWARE, Westwood, MA	\$14,000
LAYER DEVELOPMENT CORP., Cambridge, MA	10,000
ACERONET, Bellingham, WA	10,000
MANAGEMENT SCIENCE AMERICA (MSA), Atlanta, GA	10,000
APPLIED DATA RESEARCH INC. (ADRI), Palo Alto, CA	10,000
COMPUTER ASSOCIATES INTERNATIONAL, Cedar Rapids, IA	10,000
INFORMATION GENERAL, Woodbury, NY	10,000
DATA MANAGEMENT CORP., West, CT	10,000
WOLFE CORP., Dallas, TX	10,000

1984 U.S. Revenues (\$000)

While Cullinet never expected or sought to become the largest software company in the world, it still is a significant accomplishment.

2. Number One in DBMS Sales

Intentions to Buy DBMS

	1983	1984	1985 (YTD)
CULLINET	173	206	148
IBM (RM)	147	180	79
ADR	76	130	64
IBM (DR2)	2	47	50
IBM (DL/0)	158	140	49
IBM (SQL)	81	110	48
SAS	91	100	46
CINCOM	38	72	17
CCA	17	21	11

Buying preference for IDMS/R is increasing because as more buyers become more knowledgeable in database technology, they recognize the technical advantages of IDMS/R over competing products.

Source: Computer Intelligence Corporation

Source: Software News

3. Number One in Manufacturing Applications

Company	1983	1984	1985
Cullinet	100	100	100
IBM	95	95	95
ADRI	90	90	90
MSA	85	85	85
ACI	80	80	80
ADRI	75	75	75
ADRI	70	70	70
ADRI	65	65	65
ADRI	60	60	60
ADRI	55	55	55
ADRI	50	50	50
ADRI	45	45	45
ADRI	40	40	40
ADRI	35	35	35
ADRI	30	30	30
ADRI	25	25	25
ADRI	20	20	20
ADRI	15	15	15
ADRI	10	10	10
ADRI	5	5	5

Company	1983	1984	1985
Cullinet	100	100	100
IBM	95	95	95
ADRI	90	90	90
MSA	85	85	85
ACI	80	80	80
ADRI	75	75	75
ADRI	70	70	70
ADRI	65	65	65
ADRI	60	60	60
ADRI	55	55	55
ADRI	50	50	50
ADRI	45	45	45
ADRI	40	40	40
ADRI	35	35	35
ADRI	30	30	30
ADRI	25	25	25
ADRI	20	20	20
ADRI	15	15	15
ADRI	10	10	10
ADRI	5	5	5

Company	1983	1984	1985
Cullinet	100	100	100
IBM	95	95	95
ADRI	90	90	90
MSA	85	85	85
ACI	80	80	80
ADRI	75	75	75
ADRI	70	70	70
ADRI	65	65	65
ADRI	60	60	60
ADRI	55	55	55
ADRI	50	50	50
ADRI	45	45	45
ADRI	40	40	40
ADRI	35	35	35
ADRI	30	30	30
ADRI	25	25	25
ADRI	20	20	20
ADRI	15	15	15
ADRI	10	10	10
ADRI	5	5	5

Company	1983	1984	1985
Cullinet	100	100	100
IBM	95	95	95
ADRI	90	90	90
MSA	85	85	85
ACI	80	80	80
ADRI	75	75	75
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ADRI	30	30	30
ADRI	25	25	25
ADRI	20	20	20
ADRI	15	15	15
ADRI	10	10	10
ADRI	5	5	5

Source: Software News

Buyer surveys show convincing proof that Cullinet's 4th Generation manufacturing applications are the way of the future.

4. Number One in User Satisfaction



When it comes to vendor support, Cullinet is rated Number One year after year in every category.

Source: Datamation/
Data Decisions

5. Number One in Management

**THE WALL STREET
TRANSCRIPT**

"The Information Source for the Business and Financial Community"

TWST Names Cullinane & Goldman
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Cullinet management has been consistently singled out by the computer and financial industries as the best. John Cullinane, Cullinet chairman, was named CEO of the Year in 1982 and Co-CEO of the Year sharing honors with Cullinet president Robert Goldman in 1984 and 1985.

Source: The Wall Street Transcript

The Leader in Information Systems Software

Cullinet

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SOME THINGS CAN NEVER BE SHARED OTHER THINGS SHOULD BE

The people who make database software have some strange logic. They tell you information is the most valuable thing in the world. And then they design their products for single-user systems.

INTRODUCING R:BASE™ 5000 MULTI-USER.

At Microrim though, we don't think anybody who needs data should have to stand in line for it. So we've developed a multi-

user version of R:base 5000 that lets users update their database while other people analyze it. And we've made this new version fully compatible with our single-user version. Which means any application you develop on the single-user version today can be run on our multi-user version tomorrow.

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Of course, we gave the multi-user version all the features that convinced the

Datapro Research Corporation to rate our single-user version as the best DBMS on the market. But we've also designed it to make optimum use of all the extra capabilities offered by the IBM PC Network (IBM PC DOS 3.1). To optimize data sharing, R:base 5000 Multi-User takes full advantage of the front end processing power of the PC. As a result, multiple users will be able to work with the same database at the same time.

While editing, data integrity is protected by a locking mechanism that operates at the item level. This important feature lets the other users work with columns and rows of the same table. Instead of making them wait around for the other guy to finish his editing job.

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R:BASE 5000 MULTI-USER FROM MICRORIM

IT ALL COMES DOWN TO COMMON SENSE.

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MICROCOMPUTERS

Windows finally opens

Microsoft's environment reaching the retail shelves

By Eric Bender
LAS VEGAS — Microsoft Corp.'s Windows operating environment, which first bowed more than two years ago, finally shipped in a \$99 retail version late last month, the company announced at Comdex/Fall '85.

The multitasking operating environment provides a graphical-based user interface and will establish "a foundation for hardware and software advancements of the next few years," Microsoft Chairman Bill Gates said.

Relatively few software houses publicly lined up behind Windows for the announcement, but Gates predicted that Windows will make many converts once software suppliers get their hands on a commercial version. "It's clearly something that needs to build over time," he said.

While Windows is targeted at the Fortune 1,500, "if you talk to large corporations, nobody knows what it really is," commented President Jon Shirley. He sug-



Microsoft Windows helps to create documents combining text and graphics.

gested, however, that a 10-minute demonstration will show 90% of Windows' benefits.

Compatible with most existing IBM PC-DOS applications, Windows is said to permit users to work with multiple applications, easily switching from one application to another and transferring information between them, according to Shirley.

The retail product also features a set of desktop applications, including a file management program, an electronic appointment book, a card-style filing program, a

See WINDOWS page 39

INSIDE

Hayes launches an internal modem supporting asynchronous and synchronous communications through the same port/39

NEW THIS WEEK

- Sperry enhances its User-net local-area network
- Compuserc introduces two optical character recognition desktop scanners
- For more on these and other new products, see pp. 71-82.

INSTANT ANALYSIS

"If I ever take off copy protection and let corporate users duplicate software, I will impose even greater responsibility on them for policing."

— Edward Sabers
 Ashton-Tate president



SMALL TALK
Eric Bender
Las Vegas Editor

Vendors jump into the nets

While we've seen a lot of lip service given to networks in the past few years, Comdex/Fall '85 gave some concrete examples that mainstream personal computer software vendors actually are plunging into nets.

Ashton-Tate President Edward Sabers, whose firm's Dbase III Plus led the list of new network applications, summed it up neatly: "We hear from our customers that the world's going local-area network."

The Las Vegas extravaganza also featured the first display of a networked all-in-one integrated micro package. Offering a version of its modular Smart Software System, Innovative Software, Inc. found itself answering many questions about what exactly you get by tailoring integrated packages for nets.

In particular, who needs a multuser spreadsheet?

"A lot of the time, you do have people working on the same spreadsheet at the same time," insisted Ron Ferguson, Innovative's marketing vice president. As one illustration, he suggested, several managers could each work separately on their own chunks of a departmental budget and then consolidate their results.

The networked Smart spreadsheet does not provide record locking, but a user can copy a spreadsheet that someone else is working on, manipulate it and then store it under a different name, Ferguson noted.

Other integrated micro software packages may lack one crucial feature for networking, he remarked. A random-access-memory-based data base

See VENDORS page 38

Norton utility, editing tools bow

By Rosemary Hamilton

SANTA MONICA, Calif. — Peter Norton Computing, Inc. has introduced an upgraded version of its utility software package and a text editing package.

Version 3.1 of the Norton Utilities marks the "sixth or seventh version" of this package, which is best known for its ability to rescue killed files from a disk, creator Peter Norton noted. More than 100,000 copies have been sold to date since the first version was introduced in 1983.

The upgraded version features a long list of enhancements, but the two major additions are Quick Unerase, which has fewer steps than the existing file search command, and Unremove Directory, which allows users to recover entire directories that have been deleted. "The main thing is

that we've made it easier to use," according to Norton. "We've added defaults that people most often want, and we've extended the power of a lot of the little programs."

Version 3.1 costs \$100. Current users can upgrade for \$25.

The \$60 Norton Text Editor, which has a menu of word processing functions, marks the first time Peter Norton Computing has offered a separate product from its utility software. According to the company, the package includes indenting aids for writing programs in Pascal, C and other structured programming languages and a parentheses and bracket-matching function that eliminates the programming task of counting open and closed parentheses and brackets.

WHO IS THE WORLD LEADER IN IBM/38-36 BACKLOG REDUCTION?

The world's most successful companies have made Fusion Products International the leading supplier of query/report-processor, PC interface and spreadsheet software for the IBM System/34/36/38.

Why is Fusion number 1, worldwide? Because we fully support the PC. Because we're one of the few 386-36 vendors who actually answer their customer-service telephones. Because we offer on-site training. Because easy-to-use means never having to read your

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MICROCOMPUTERS

Vendors get into nets

From page 37

management system can't handle record locking.

Ash-ton-Tate and Innovative also joined the trend toward network "packs," selling their applications configured for a certain small number of users on a net. As customers expand their nets, they simply buy more packs. While software pricing is always guaranteed to make somebody unhappy, the pack seems to be emerging as the way to market network software.

"We're now selling in five-user increments," said Gail

than an order of magnitude more complex."

So how effectively will dealers — the main distribution channel — support the new packages? Eiber acknowledged that the situation makes him a bit uneasy.

Ash-ton-Tate originally considered offering Dbase III Plus in two versions, single user and network, and restricting sales of the network version to high-end resellers such as Businessland, Inc. and Entre Computer Centers.

The decision to go with network packs still leaves an additional profit margin for dealers, some of which will go to training and support, he said.

Dbase III Plus' network hooks are no surprise, as Ash-ton-Tate announced plans for a network version when Dbase III was first announced in July 1984. For other vendors, it's just a question of time.

Fred Gibbons, president of Software Publishing Corp.,

described nets as an ongoing grass roots movement and "the trunk from which office automation will spring." Software Publishing will move its products over to networks within six to nine months, he predicted.

"All of our products can run off a server," Microsoft Corp. Chairman Bill Gates said. While Microsoft Word is available in a networked version, he was cagey about plans for other network-specific applications.

Gates did comment that data base management "is the big one, the one where you really take advantage of the server." He also predicted that electronic mail will join data base managers, spreadsheets and word processing as a primary application.

And Gates repeatedly underlined the trend toward networking desktop personal computers. "We really believe there will be one on every desk."

77

While software pricing is always guaranteed to make somebody unhappy, the pack seems to be emerging as the way to market network software.

James, chief executive officer of Software Connections, Inc., which formerly marketed its packages in large and small net markets. "Our resellers like that. They can talk about uniform pricing to users, and it gives customers a reason to come back."

Along with a handful of other suppliers, Software Connections has been offering multiuser network application for years, and, "We've caught a few arrows," James said. "We're glad to see some of the better known players get into the market — it will help our cause."

He cautioned, however, that not all network applications really offer full multiuser functionality, with some vendors selling only network pricing rather than a true network design. Supporting only PC-DOS 3.1 locking and unlocking features is "pretty superficial," he commented.

Multiuser personal computer net software still lacks the sophistication of mainframe packages, one missing ingredient being "a fully distributed operating system that gives more power and resources to the individual user," he said. "The final network operating system standard has yet to be revealed."

As micro software gets more powerful, however, it poses new challenges to vendors and resellers. "In the multiuser version, we ran into issues we never thought we'd have to deal with," Eiber commented. "It's more

The new IBM 3161 ASCII Display Station is really seven different ASCII displays in one.

In addition to its own function-rich native mode, the new IBM 3161 can emulate:

- IBM 3101 Model 881
- ADDS Viewpoint*
- Hazeltine 1500*
- Lear Siegler ADM-5*
- Lear Siegler ADM-5*
- Televideo 910*

Besides fitting nicely into existing systems, the IBM 3161 also offers impressive improvements in ergonomics.

Improved Ergonomics For Improved Productivity

Take the 102-key ASCII-style keyboard, for example. Its low profile, gentle contour and typewriter touch make for faster keying with fewer errors. The keyboard has program-mable function and editing keys so it can be custom-tailored to meet your application needs.

Then, for comfortable viewing, there's the tilt and swivel of the 12" display. And the sharp, clear 8 x 16 character matrix for easy reading. Plus cursor, character and field attributes (blink, reverse video, underscore, dual intensity, etc.). And scrolling. And partitioning. And lots more.

The IBM 3163 with Plug-In Cartridge

And, as if that weren't enough, we're also announcing

The sharp 8 x 16 character matrix helps make for easier reading and fewer operator errors.

a second new ASCII display station with even higher function—the IBM 3163.

Outwardly, these two new displays look alike. But the 3163, in addition to its built-in emulation of the IBM 3101 Model 881, also offers the ability to emulate the DEC VT 52 and VT 100* by means of a unique plug-in cartridge.

And while you'll like the power and flexibility of the 3161, for your high-function applications the 3163 goes even further. For example, a 7,680-character buffer and up to three windows enable you to view and modify portions of different host data bases. The 3163 lets you redefine and even recap the keys.

On both displays the setup is menu-guided and written in plain English, so it can be done easily and quickly. The point is, both are designed to improve your user productivity.

Very Attractive Prices

The price per terminal is \$695 for the 3161 and \$1,095 for the 3163. Quantity discounts are available. What's more,

IBM maintenance offerings start as low as \$35 per year per terminal for customer carry-in repair.

Now there's a new family of ASCII displays with the quality, service and support IBM is famous for. Both displays are available through IBM Authorized Distributors and IBM marketing representatives.

FEATURES	3161	3163
Lines x Characters	25 x 80	25 x 80
Double-strike chars	No	Yes
Line drawing chars	24	24
Vertical scroll	Jump	Jump/ Smooth
Reliability		
Successful buys	24	24
Warranty	No	Yes
Performance	Basic	Max/Basic

Call 1 800 IBM-2468, Ext. LE/90 for the name of an Authorized Distributor near you.

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IBM

MICROCOMPUTERS

Hayes internal modem supports synchronous data links

NORCROSS, Ga. — Hayes Microcomputer Products, Inc. has introduced the Smartmodem 2400B, said to be the first internal modem for the IBM Personal Computer line and compatibles that supports both asynchronous and synchronous data transmission through a single standard communications port.

The device's synchronous communications capabilities, which will permit users to access mainframe applications, address a growing demand among customers, said Hayes President Dennis Hayes.

Available this month for \$730, the 2400B operates at 300, 1,200 or 2,400 bit/sec. over standard dial-up or

leased lines, the company said.

The device is fully compatible with Hayes' Smartcom II communications software and will be offered bundled with that software for \$790, according to the company.

The 2400B offers all the features of Hayes' stand-alone 2400 model, including

local and remote diagnostics, automatic speed adjustment, call-progress monitoring and the ability to transmit a data file and then switch to voice transmission in a single phone connection, according to the company.

Working through the standard COM1 or COM2 ports, the modem also "handles many functions usually per-

formed by a separate synchronous interface card," the supplier said. "For example, in an [IBM Synchronous Data Link Control] environment, these functions include zero-bit insertion and deletion, address "recognition" and Nonreturn to Zero and Nonreturn to Zero - One encoding and decoding."

The new modem will reportedly support communications software written to the just-announced Hayes Synchronous Interface, a set of conventions for synchronous communications applications.

different ASCII displays in one.

Windows finally ships

From page 37

notepad, a telecommunications program, a calculator and a clock. Several utilities also are bundled in, including a control program for system parameters, an editor for program information files, a program for setup of random-access memory disks, a clipboard and a print spooler.

During a limited-time introductory offer, two applications will be bundled in: Windows Write, a graphics-oriented word processor, and Windows Paint, a drawing tool.

On machines equipped with a hard disk drive or memory expansion card, such as Intel Corp.'s Above Board, Windows lets users run more applications than will normally fit in the 640K-byte limit of the IBM Personal Computer and compatibles. "If there is insufficient space to load a program, Windows will automatically attempt to swap out an application that is not in use," Microsoft said. A few existing applications, primarily asynchronous communications packages, cannot be swapped, the company noted.

Windows operates with either a keyboard or a mouse. The software requires at least 256K bytes of internal memory and two floppy disk drives. A hard disk drive and 512K bytes of memory are recommended for running multiple applications or when using PC-DOS 3 or higher.

Windows works with the IBM Color Graphics Adapter, IBM Enhanced Color Adapter and the Hercules Computer Technology Co. Graphic Card. Among supported output devices are the Hewlett-Packard Co. Laserjet printer, Epson America, Inc. FX-80, IBM Graphics Printer and IBM Proprinter, Okidata Corp. 102 and 100 and the HP 7470A and 7470B plotters.

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SYSTEMS & PERIPHERALS



HARD TALK
Doris Harwood
On Senior Users

Beast from down below

A beast lurks within some of our industry's most exciting products. It is a monster that lies dormant until activated by users' demands.

The beast surfaced in Digital Equipment Corp.'s Microvax II, which looked like an innocuous enough small computer but which is now threatening to devour the whole lower and mid-size range of DEC's other VAXs.

Then, Data General Corp. announced its Eclipse MV/3000DC, a sleek, large-scale-size imp that houses the standard Eclipse line's operating system and a 15-by-15-in. board that has the makings of a full-scale minicomputer. Also, for less than half the price of DG's next-in-line MV4000DC, it has some functions even minicomputers do not routinely have.

Apollo Computer, Inc.'s founder John Poduaka joined the dance macro two weeks ago by raising the specter of desktop supercomputing. He claimed that within a year and a half, he will surround the engineering marketplace with desktop access to 20 million to 30 million instructions per second of power via networking. Will wonders never cease?

An each of these companies introduced its little dander, one wonders if they are aware of the effect of these beasts on the market. In talking with Microvax II owners, I hear requests and demands for more power, more capacity, more connectivity.

"The Microvax II is a wonderful machine, but it does not have enough storage space," users say. "The Microvax II is a great system, but it needs to have clustering capabilities," software developers claim. "The Microvax II is incredibly powerful, but I want to add more users to it than DEC allows," an MIS manager complains.

All the while these people are asserting that they could not go back to the DEC VAX-11/750 and even the VAX-

See **BEAST** page 48

Micro/PDP-11/83 debuts for desk-side, cabinet use

By James Connolly

MAYNARD, Mass. — Digital Equipment Corp. has expanded the Micro/PDP-11 series of minicomputers, which is introduced in early 1984, by adding a microprocessor-based version of its PDP-11/83.

The Micro/PDP-11/83 is the third micro-based version of the PDP-11 and was designed for desk-side and cabinet implementations. DEC officials noted that the Micro/PDP-11 system, based on DEC's J11 microprocessor, were designed for customers with investments in the PDP-11 architecture and software.

Designed as DEC's most powerful Q-bus, 16-bit computer, the Micro/PDP-11/83 reportedly can support up to 33 users when configured with 1G byte of main storage in a 40-in.-high cabinet and up to 21 users in the desk-side configuration.

Previous Micro/PDP-11 offerings included the Micro/PDP-11/23 and the Micro/PDP-11/73.

Abbot Gilman, DEC's product manager for the Micro/PDP-11/83, said of the new system, "The PDP-11 is the world's most popular computer in its class. Since its introduction 15 years ago, more than half a million computers in the family have been shipped. The number of man-years of [DEC] and third-party software development numbers in the millions, and the Micro/PDP-11/83 is capable of running these application programs without cross-assembly or recompiling. We've combined a stable architecture and software environment with state-of-the-art advances in processor, memory and peripheral technology."

DEC said the Micro/PDP-11/83 is the first Q-bus PDP-11 system available with DEC's 464M-byte nonremovable and 206M-byte removable-media disk drives. System elements include an 18-MHz chip set and a private memory interconnect.

See **DEC** page 47

Burroughs user gains speed, space Switch from B6810 to A 15 improves performance

By Dennis Robinson

SEATTLE — A nursing home firm that ran two Burroughs Corp. B6810 mainframes has replaced them with a Burroughs A 15 system and gained two to three times faster performance plus plenty of room in which to grow.

Hillhaven Corp. owns and operates 400 convalescent homes in 43 states, said Robert Toblason, manager of computing and network services. Seven years ago, Hillhaven bought its first B6810, adding another one four years ago.

The B6810 is "a very good workhorse — we were at about 80% to 85% capacity on them consistently," he said. Most of the application load from the 4.6M-byte B6810 machines has been moved to the 34M-byte A 15. The new machine is routinely running at 25% to 28% of capacity, Toblason said. He added that a "pretty heavy week" recently used 98% of

the machine's capacity.

"We took a good look at IBM's 3090 series" when it came time to decide on a new system, Toblason said. The cost of converting existing software was a major factor in deciding on Burroughs equipment.

Hillhaven also did research to make sure that Burroughs had overcome equipment maintenance problems it had experienced over the last three to four years, he said. "I think vendors always have a way to go — things to improve upon — but we are pleased," he said of Burroughs' efforts to improve performance.

The IBM 3090 that the company considered would have required software conversions that, according to Toblason, involved both real dollar outlay and lost opportunities is not being able to develop new systems for a period of time. The prin-

See **BURROUGHS** page 48

INSIDE

The mainframe vs. microcomputer debate continues with even co-workers disagreeing on whether micros will emerge dominant/42

Hewlett-Packard announces a family of computer-aided design systems/48

NEW THIS WEEK

■ Telex Computer Products introduces two intelligent workstations

■ Encode Technology offers a computer-aided manufacturing system

■ For more on these and other new products, see pp. 71-92.

INSTANT ANALYSIS

"I have a philosophy that a benchmark can be made to come out any way you want it to."

— Robert Toblason, a user of the Burroughs A 15 mainframes and manager of computing and network services for Hillhaven Corp.

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IDC execs disagree on impact of micro use on mainframes

By Paul Hoeneslewald

NEW ORLEANS — As microcomputers increase in power, how will they impact mainframe operation?

William Zachmann, corporate vice-president of research at International Data Corp. (IDC), and Frank Oens, director of IBM systems advisory services at IDC, presented two contradictory scenarios

at the 1988 IDC Fall Executive Conference titled "MIS Management Issues and Strategies: Sharpening Your Company's Competitive Weapons."

Zachmann claimed that small systems now represent the best system price/performance ratios for the first time ever. The price for each mainframe million instruc-

tion per second (MIPS) of processing power is approximately \$160,000, compared with only \$5,000 per microcomputer MIPS. Also, mainframe main storage costs 20 times more than similar microcomputer capabilities.

Other economic benefits that smaller systems offer are lower maintenance costs, fewer system operators and

less installation space.

Handicap to small system use, such as network management and security, are smokescreens from managers who are unwilling to evolve, according to Zachmann.

"Security problems exist on large systems as well as on small systems," he claimed. On small systems,

there are many access points. On large systems, a person has access to all corporate data once that person has bypassed security procedures.

A by-product of this shift in price/performance will be a variety of implementation alternatives. "Smaller systems can supply most of the functions of the larger systems," Zachmann said.

Also, users who confine their strategies to traditional large systems will suffer. "Someone who solves a problem and pays \$5,000 per [MIPS] will spend a lot less money than the user working with a mainframe solution," he said.

So, information system costs will be transformed into competitive weapons. "If one company's system costs less than its competitors', services can be priced more cheaply, yet profits may actually be greater," Zachmann said.

"This shift in economics will destroy the way that information systems have been planned and implemented," he added.

Companies will be forced to staff technology teams, which would experiment with different types of equipment. "The team could tinker with a local-area network even if the company was not planning on installing one," the analyst said. "A company first has to understand how a technology works before it realizes when it is needed."

Porsche vs. Boeing 747

Gens disagreed with Zachmann's cost comparisons. He presented his own example and compared a Porsche automobile that can travel at speeds up to 200 miles per hour and a Boeing 747 that moves at speeds of 600 miles per hour. Using Zachmann's logic, the 747 aircraft should cost only three times more than the Porsche.

"We all know that 747 is priced at a factor more than the Porsche," he said. "What [Zachmann's] comparisons don't take into account are system functions. We all know that a Porsche can't fly. Microcomputers cannot complete some mainframe functions."

Gens added that large systems will continue to be used widely because IBM dominates most markets and it is intent on increasing its principal revenue that comes from mainframe sales.

One attendee presented another shortcoming in Zachmann's scenario. "I can't get some of my necessary projects funded," he said. "I would be laughed out of the company if I wanted to support an evaluation team that was just tinkering with technology."

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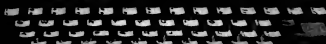
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SYSTEMS & PERIPHERALS

HP reveals workstation, marketing contracts, OA software

Entries fortify CAD/CAE push

By George Bernard Shaw

PALO ALTO, Calif. — Hewlett-Packard Co. has announced design workstations, marketing agreements and technical office automation software in support of computer-aided design and engineering (CAD/CAE) functions.

The announcements are a natural outgrowth of the company's interest in design engineering, a spokesman said. "Our history is instrumentation, which we still do today," the spokesman said. The design engineers that the company has always built for are now using more and more computer-aided systems, and HP is committed to providing what they need, he added, by making mechanical design, software design, electrical design and QA functions available on the same workstations.

The company released its Designcenter ME Series 60 mechanical CAE products that are systems of application software, engineering workstations and related peripherals configured for mechanical and electrical engineering applications. The ME Series 60 functions on the HP 9000 Model 650 under the HP-UX 5.1 operating system.

Supports stretchy dresses

The standard configuration supports one to three bit-mapped graphics displays and up to 32 terminals for technical QA such as word processing and documentation.

Prices for the ME Series 50 will vary according to the configuration. A typical three-seat configuration consists of the HP 9000 Model 550 with 64M bytes of random-access memory, two CPUs, the operating system, an HP 7914 disk drive, three HP 98700 graphics displays, an HP Z39A terminal, an HP plotter or printer and HP Solid Modeling Design software, support and training. The price is approximately \$250,000.

The HP Logic Designstation and Personal Logic Designstation each perform design capture and verification in electrical engineering applications and are part of the HP Designcenter series, which includes both mechanical and electrical CAE products.

The Logic Designation uses HP Series 300 engineering workstations and the HP-UX 5.1 operating system in conjunction with HP's Design Capture System engineering software and Genrad, Inc.'s Hilo-3-based verification system software package. The

Personal Logic Designation can use either the HP Vectra personal computer or the IBM Personal Computer.

A typical HP Logic Designstation costs \$58,000 and includes the Series 300 Model 310 with a 56M-byte disk drive, a ¼-in. tape drive with 67M-byte capacity, design capture software system, the Hilo-3 logic simulator with

interfaces and simulation models

A typical configuration of the HP Personal Logic Designation costs \$20,000 and includes the Vectra personal computer with design capture software and a 40M-byte internal disk drive.

Also announced was the HP Designcenter ME Series 10, a workstation-based,

two-dimensional design and drafting system for mechanical engineering applications. The ME Series 10 operates on the HP 9000 Series 300 engineering workstation. Prices depend on selected configurations. Typical system prices are approximately \$40,000 for the Series 10 and \$20,000 for a ME Series 5, which is a scaled-down, en-

try-level system.

Marketing agreements between HP and four electrical engineering CAD/CAE software suppliers are said to supply a range of printed-circuit board and integrated circuit design capabilities on HP hardware. Initial participants in the program are Futurenet Corp. of Chate-



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"I think it's fortunate that On-Line Software International came out with VERIFY, because it is the solution we had been looking for," Latenser continued. By way of an example, he cited an on-line system that required five successive revisions. "From the documentation standpoint alone, VERIFY shaved a whole day off the revision process. Quality and reliability were enhanced," he said.

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Programmer productivity goes up appreciably with InterTest, according to Kathleen Wolfson, Senior Systems Analyst at ADT Security Systems, New York. "We get systems out quicker than we would have otherwise," she stated. "They're much more

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SYSTEMS & PERIPHERALS

McDonnell Douglas improves local-area net-based Microdata 7000

By Donna Richmond

IRVINE, Calif. — Improvements to the Microdata 7000 (M7000), Integrated Business System, a local-area network-based distributed relational data base system, have been announced by McDonnell Douglas Computer Systems Co., the former Microdata Corp.

The enhancements are a

result of continuing development of the product, said Terry Wetton, product sales manager for the M7000. By repackaging the hardware and incorporating newer technology, Wetton said, the company has been able to produce the system in a less expensive way than before. He added that the unit has been well received, with 100

installations in the U.S. and more than 650 worldwide since its introduction in 1983.

The M7000 has been packaged in a smaller cabinet. Its local-area network now consists of standard coaxial cable with transfer rates improved from 625K byte/sec. to 5M byte/sec. Configuration flexibility has been im-

proved by eliminating the old eight- and 16-port sets and by selling ports in pairs, the company said.

The Sovereign operating system now includes a screen painter, enhanced file editor, 5¼- and 14-in. disk support, an improved local-area network protocol that can address more peripherals and that has greater error-cor-

rection facilities, a personal computer link (information terminal emulation and file transfer) and speed enhancements to the company's English information retrieval language.

The M7000 system is said to accommodate up to 308 concurrent users. The basic unit, for a single user, costs \$25,000.



thoroughly tested, and much more accurate, which is very important to me."

"If ever there was a package that was user-friendly, InterTest has got to be the best at that," Wolfson continued. "The biggest benefit to us is, you can have people who are not the world's greatest experts learn from their mistakes, and they'll be able to turn something around very quickly."

"There are other testing packages, but InterTest is one of the few packages on the market that I just can't imagine running a CICS shop without," she observed.

DataVantage GTE Communication Systems: Easy testing of complex IMS recursive relationships.

GTE's first use of DataVantage was at its North Lake, Illinois facility for manufacturing large central office switching systems. "This was a particularly demanding application because of the IMS recursive relationships involved," Senior Data Base Analyst Brian Bowers explained. "DataVantage has proved to be a most valuable data base subset management tool for us."

Running an IBM 3084[®] under IMS, GTE Communication Systems uses DataVantage to generate accurate subsets of data bases. "We have found it to be a completely functional tool that is also easy to use," he said.

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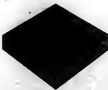
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MIS DP SOFTWARE STRATEGIES

HP unwraps workstation

From page 46

worth, Calif.; Analog Design Tools, Inc. of Menlo Park, Calif.; Zenken, Inc. of Yokohama, Japan; and VLSI Technology, Inc., based in San Jose, Calif.

HP also released technical CA software for the HP 9000 Series 300 and 500 engineering workstations. The Alix integrated package from Applix, Inc. is said to include applications such as multi-font word processing, sketching, graphics, spreadsheet, business graphics, personal data base and electronic mail. Alix costs from \$2,500 to \$9,000.

Stand-alone choices of applications include project management, graphics, word processing, spreadsheet and equation solving and range in price from \$195 to \$1,550 on the HP 9000 Model 300, depending on the product and number of users. On the HP 9000 Series 500 machines, the cost of the stand-alone products will range from \$1,495 to \$2,500.

DEC unveils mini version

From page 41

(FMI). The FMI is said to provide a high-speed data path between processor and memory. The system also uses error-correcting memory to enhance reliability.

DEC also announced enhancements for the MicroVAX FVP-11/73. The company added higher density memory boards and the capability to use a 71M-byte, 5¼-in. storage disk and 96M-byte streaming tape on the mid-range system.

A rack-mounted version with 1M byte of memory costs \$10,100, and floor-standing systems start at \$18,045.

Prices for the MicroVAX 11/83 start at \$34,300 for a desk-side version and \$53,420 for a cabinet version.

*From an edited survey of all InterTest users conducted by Bruce & Wharton.

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SYSTEMS & PERIPHERALS

Burroughs user gains speed, space

From page 41

cially Cobol shop has 30 programmers and a total DP staff of about 66 people, including operators, networking specialists, applications analysts and administrative personnel.

Tobiasson said that the company also looked at a pair of used Burroughs 57500 machines, but the 57500s were slower and had less memory than the A 15; such a solution would have satisfied the company for only one or two years.

Hillhaven uses more than 410 Convergent Technologies, Inc. microcomputers, mostly AWS 577 models, which are used for patient accounting, payroll data entry and a few nursing applications in its convalescent homes. All of the micros are networked to the A 15 in corporate headquarters using networking software from Automated Programming Technologies, Inc. of Birmingham, Mich. They were previously networked to one of the B6810s via Convergent Technologies' RTE software package.

Beast within Microvax II

From page 41

11/780, which have the capacity for all those things because they are too expensive now relative to the Microvax II.

Third-party vendors are working overtime to come up with solutions to the built-in limitations of these systems. Systems Industries claimed it can cluster the Microvax II with other VAXs. Owners have been very creative in finding clever ways to add more users. DEC itself keeps adding memory and storage options to the machine.

DG will most likely suffer even more demands with its MV/2000DC. When asked why a customer should buy the company's previous low-end minicomputers, such as the MV/4000DC, instead of the new MV/2000DC, a spokesman said the new one cannot yet share the large peripherals that the rest of DG's line can share. How long does the company think it can get away with that? If DG does not design a way to share, then a third-party vendor surely will, putting DG's previous low-end machines in a precarious position.

The idea of supercomputer power on a desk is not new, although it still seems like science fiction. If entrepreneur Potomac carries it out, and if a capability that proved so available in a year and a half or two years, what will happen to the hardware industry in general?

The industry has started to swallow its own tail. But progress cannot be stopped, nor should it be. Just as we could not have predicted something as powerful as DG's MV/2000DC in such a small package five years ago, so we cannot even begin to imagine what is just around the corner now. We will just have to wait to see what happens after the monster has devoured its older siblings.

99

A payroll job that took 10 hours to run on the B6810s now runs in less than three hours on the A 15.

The Hillhaven home office processes payroll information for its 40,000 employees twice a month. A payroll job that Tobiasson described as a processor-intensive application that took 10 hours to run on the B6810s now runs in less than three hours on the A 15. A closing process in the general ledger package, which ran in 24 to 30 hours before, now runs in 12 hours, he claimed. The company added about 1.6G bytes of disk storage equipment for a total of 7G bytes now.

Installation of the new system went smoothly, Tobiasson said. The A 15 rolled off the truck on Sept. 9 at 9 a.m., and by 7:30 that night it was "hot loaded," meaning that it started running.

Because Hillhaven was the first user that was not a beta test site, there were Burroughs manufacturing people present for observation and training. "There was one installation manager, and he knew what he was doing, and he had everyone very well coordinated," Tobiasson said.

After they left, the local Burroughs field engineers took over to test the machine. For the next week, they handled any problems within an hour, Tobiasson said. The machine was turned over to Hillhaven for use on Sept. 16.

"By the first or second week in October, we had our three main applications — payroll, general ledger and accounts payable — up and running," Tobiasson said. "We had some older code that we had to recompile. ... On the A 15, a compile list that would have taken all day on a 6800 took an hour," he added.

Tobiasson did not run a lot of benchmark tests before his purchase. "I have a philosophy that a benchmark can be made to come out any way you want it to," he said. He preferred to dig around and find answers to his questions, he said.

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NEWS

Mini system cuts microwave tool maker's time-sharing costs

PALO ALTO, Calif. — A manufacturer of microwave equipment for military and satellite operations, which did all of its programming through time-sharing services, installed a minicomputer system and, subsequently, brought its time-sharing bills down to earth.

In 1983, Telebyte MEC, a manufacturer of traveling wave tubes, did not have an in-house computer system. It ran all of its development programs on time-sharing services. "The main problem was the high cost of time-sharing," explained Larry Wood, the firm's project leader for research and development. "We decided to bring the programming in-house and save money."

"We wanted a system that could handle our proprietary design programs written in Fortran," he continued. "The largest program we have uses 3M bytes of main memory."

"We needed a system capable of handling multiusers so we could run several programs at once." The system also had to be expandable so that the firm could grow with it, Wood added.

In 1983, the firm installed a Hewlett-Packard Co. HP 1000 XL minicomputer with 3M bytes of main memory and a 12M-byte hard disk. The firm has since replaced the original CPU for an HP 1000 A860 processor and replaced the 12M-byte hard disk with a 132M-byte hard

disk. According to Wood, the system supports several HP 3631 terminals, a 3633 graphics terminal, a 3237 color graphics terminal, an HP 150 personal computer used as a graphics terminal and a 3634 data entry terminal. In addition, an IBM Personal Computer, running communications software, has also been integrated into the network.

Originally, the firm used the system for its less complicated but frequently run development programs and kept its lengthy, complicated programs on time-sharing mainframe computers. Wood said the firm purchased a high-speed printer and wrote a custom communications program to allow two-way communica-

tions between the printer and the time-sharing computers. "Through a 4,800 bit/sec. modem, we used the printer as a batch printer to download programs from the time-sharing services," Wood explained.

"As we grew with the system, we brought more of our development programs in-house," he added. The nature of the traveling wave tube manufacturer's business requires a constant development process for designs undergoing several iterations before the final versions are completed. "Traveling wave tubes are used in satellite communications," the firm's R&D project leader explained. "For example, when television signals come from Europe, they are transmitted via satellite. They are beamed up through a traveling wave tube."

"Our customers always require new designs for our products," he continued. "The computer enables us to go through several iterations of the design program quickly to come up with a new computer design."

One of the firm's most complex design programs is used to design electron guns, the part of the traveling wave tube that emits an electronic beam. But the program requires 2M bytes of memory to run, Wood said, and the HP 1000 A860 only had 3M bytes of memory.

In order to protect itself against slowdowns, the firm added an HP 1000 A800 processor, which provided an additional 3M bytes of high-speed memory, and a floating point match processor. With these additions, the firm now runs the complex electron gun program in-house, using double-precision numbers to produce accurate results.

"We now use the HP 1000 A860 to control and store data for our automated network analyzer," Wood said. "That gives us more room to run our applications on the A800."

Time-sharing savings

Wood said the firm still uses time-sharing services, but only for storage and as a backup when the minicomputer system goes down. "Before we had the system, our bill for outside time-sharing services peaked at \$15,000 per month," Wood said. "Since we have been off-loading our program onto our own system, our latest time-sharing bill was \$1,200 a month. We use HP for software consulting and maintenance services, which costs \$700 a month. The difference is what we save every month — about \$13,000."

Wood estimated that the firm would cash in approximately \$80 million in sales this year.

Since the minicomputer system was completely new to the microwave equipment manufacturer, the firm hired one new employee to oversee system operation. The new system manager attended a two-week training program offered by HP for the HP 1000, according to Wood.

The implementation of the system was not without its problems, but according to Wood, the problems were solved as they arose. "The only problems we had occurred when new software revisions came out," he explained. "We found some bugs in the programs, which we reported to HP, and then we worked together to solve them."



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NEWS



CALL FOR PAPERS

**THE MACHINING OF
MINIATURE PARTS**
 Detroit, Oct. 21-22

A call for papers has been issued by the Society of Manufacturing Engineers (SME).

Mail inquiries by Jan. 10 to Leigh E. Sweda, Special Programs Division, Society of Manufacturing Engineers, P.O. Box 950, One SME Drive, Dearborn, Mich. 48121.

**EUROMICRO '86: THE 15TH
SYMPOSIUM ON
MICROPROCESSING AND
MICROPROGRAMMING**
 Varese, Sept. 16-18

Original, unpublished papers are being sought on the following topics: software engineering; management of micro-based projects; software engineering environments; hardware development tools; AT&T Unix applications; hardware description languages; very large-scale integration hardware and software; multicro-processors — structure, software and operating systems; new computing structures; and continuing education of engineers.

People interested in presenting a scientific paper should submit six copies of a three-page abstract by Jan. 15 to the program chairman,

John Molgaard, Elektronik Centra-len, Venlighedsvej 4, DK-2970 Hørsholm, Denmark.

**SYMBOAC '86: THE 1986 ACM-
SIGSAM SYMPOSIUM ON
SYMBOLIC AND ALGEBRAIC
COMPUTATION**
 Ont., Canada, July 21-22

Symac '86, sponsored by the Association for Computing Machinery's Special Interest Group on Symbolic and Algebraic Manipulation (SIGSAM), has issued a call for papers. Papers, tutorials, system demonstrations and proposals for discussions are invited on the following topics: algebraic and analytic algorithms, problem representation and solution, languages, systems and applications.

Five copies of submitted papers with abstracts must be received no later than Jan. 15 by D.Y.Y. Yun, Program Committee Chairman, Symac '86, Department of Computer Science and Engineering, Southern Methodist University, Dallas, Texas 75276. General conference information may be obtained from Richard Fateman, EECB Department 673, Evans Hall, University of California, Berkeley, Calif. 94720.

**1986 MICROWAVE POWER TUBE
CONFERENCE**
 Monterey, Calif., May 12-14

Papers for this conference may include uncompleted work, reports on unsolved problems, recent new requirements and ideas not yet fully worked out. Specific topics related to

new U.S. Department of Defense thrusts such as the Strategic Defense Initiative, high-power radio frequency (RF) generation in space and the impact of low observable criteria on RF system design are appropriate for submission.

The deadline for the submission of abstracts is Jan. 23. Twelve copies of all materials should be submitted to Ralph Nadell, 1986 Microwave Power Tube Conference, Palisades Institute for Research Services, Inc., 11th Floor, 201 Varick St., New York, N.Y. 10014.

CLEO '86
 San Francisco, June 8-12

Topics to be considered for the Conference on Lasers and Electro-Optics (CLEO) include the following: atmospheric and space applications, industrial applications, lasers in chemistry, laser fusion and laser-produced plasmas, gas lasers, solid-state and liquid lasers, medical applications, laser processing of semiconductors and microelectronics, nonlinear optics and spectroscopy, optical communications, optical signal processing, switching and bistability, optical storage, ultrafast optics and electronics and optical materials.

Solicited are original papers, not previously presented, that describe new technical contributions to the areas covered by the technical sessions as broadly described by the list of topics above. The deadline for submission of papers is Jan. 6. Papers should be forwarded to CLEO '86, c/o Optical Society of America, 1816 Jef-

erson Place N.W., Washington, D.C. 20036. Papers submitted from Europe should be sent to the subcommittee chairman, F. P. Shafer, Max Planck-Institut für Biophysikalische Chemie, Abteilung Laserphysik, D3400 Göttingen-Nikolausberg, West Germany.

**1986 INTERNATIONAL
CONFERENCE ON PARALLEL
PROCESSING**
 St. Charles, Ill., Aug. 19-22

Authors are invited to submit papers describing recent advances on all aspects of parallel and/or distributed processing. These may include parallel and distributed logic circuits; impact of very large-scale integration on parallel processor architecture; various concurrent, distributed, parallel, pipeline or multiple-processor architectures; processor-memory interconnections; computer networks; distributed data bases; reliability and diagnostics; or various application studies.

The deadline for submitting papers is Feb. 1. Papers should be submitted to one of the following people. Hardware papers go to Kai Hwang, Computer Research Institute, SAIL-110, University of Southern California, Los Angeles, Calif. 90089. Software papers go to Steven M. Jacobs, TRW Defense Systems Group, 119/1842, One Space Park, Redondo Beach, Calif. 90278. All other papers go to Earl E. Swartzlander, TRW Electronics Systems Group, M5-1408, One Space Park, Redondo Beach, Calif. 90278.

NEWS



CALENDAR

WEEK OF DECEMBER 2

DECEMBER 8-11, CHICAGO — 1985 Fall Industrial Engineering Conference. Contact: Stephanie Starr, Institute of Industrial Engineers, 25 Technology Park/Atlanta, Norcross, Ga. 30092.

DECEMBER 9-10, BOSTON — Systems Analysis & Design for the HP 9000. Contact: Charles Volk, Volk Associates, 24 Undine Ave., Winthrop, Mass. 02152.

DECEMBER 9-10, DALLAS — PC/MIS Managers Speak Out! Contact: Ken Orton, Future Computing, Inc., 8111 LBJ Freeway, Dallas, Texas 75251.

DECEMBER 9-10, DALLAS — Third Annual Microcomputer Conference. Contact: Financial Management Society, Inc., Suite 2221, 111 E. Wacker Drive, Chicago, Ill. 60601.

DECEMBER 9-11, WASHINGTON, D.C. — Financial Information Systems. Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

DECEMBER 9-13, LOS ANGELES — Telecommunications and Communications Engineering Program. Contact: University of California at Los Angeles Extension, Department of Engineering and Science, P.O. Box 24901, Los Angeles, Calif. 90024.

DECEMBER 9-13, MIAMI BEACH — The 2nd Conference on Artificial Intelligence Applications. Contact: Trade Associates, Inc., Exposition Management, Suite 200, 12260 Rockville Pike, Rockville, Md. 20852.

DECEMBER 10-11, NEW YORK — Emerging Technologies 1986. Contact: Yankee Group, 14th Floor, 89 Broad St., Boston, Mass. 02110.

DECEMBER 10-12, DETROIT — Automotive Computer Graphics Conference and Exposition. Contact: Carmelita Smirnes, Media Relations Coordinator, Engineering Society of Detroit, 100 Farmworth Ave., Detroit, Mich. 48202.

DECEMBER 10-12, PHILADELPHIA — 1985 Videodisc, Optical Disk & CD-ROM Conference/Exposition. Contact: Jean-Paul Enard or Marilyn Reed, Meckler Publishing, 11 Perry Lane W., Westport, Conn. 06880.

DECEMBER 10-12, TOKYO — Interface in Japan. Contact: Peter B. Young or Linda M. Vogel, Interface Group, Inc., 300 First Ave., Needham, Mass. 02194.

DECEMBER 11-13, ANAHEIM, CALIF. — Design West '86 — The Eighth National DEC-Compatible Exposition. Contact: Carol Henderson, Expocon International, Inc., 55 Princeton-Hightstown Road, Princeton Junction, N.J. 08550.

DECEMBER 12-13, OAKLAND, CALIF. — Focus on Business Videotex. Contact: Madelyn Davis, Videotex Industry Association, Suite 200, 1901 N. Pl. Myer Drive, Roslyn, Va. 22206.

DECEMBER 12-13, WASHINGTON, D.C. — Satellite Communications. Contact: TMSA Seminars, c/o Technology Training Corp., Department SATCOM, P.O. Box 3608, 3430 Kashiwa St., Torrance, Calif. 90510.

DECEMBER 13, DALLAS — MIS/DP/Telecommunications Consultants. Contact: Barbara Moschian, Informart, 1960 Sammons Freeway, Dallas, Texas 75207.

WEEK OF DECEMBER 15

DECEMBER 16-17, FORT LAUDERDALE, FLA. — Buying and Selling Rights to Software, Hardware and Services. Contact: Data-Tech Institute, P.O. Box 2429, Lakeview Plaza, Clifton, N.J. 07016. Also being held Dec. 17 in Boston.

DECEMBER 16-18, NEW YORK — Data Analysis & Logical Design Workshop. Contact: Elise Babalis, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77062.

DECEMBER 17-19, WASHINGTON, D.C. — System 2000 Applications Programming Course. Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

DECEMBER 19, COLUMBUS, OHIO — DOS/VSE Working with Shared DABD. Contact: Betty Bruce, Education Coordinator, Goal Systems International, Inc., 5465 N. High St., Columbus, Ohio 43214.

DECEMBER 19-20, BOSTON — Troubleshooting the Data Communications Networks. Contact: The American Institute, Carnegie Build-

ing, 55 Main St., Madison, N.J. 07940.

WEEK OF JANUARY 5

JANUARY 6-8, IRVINE, CALIF. — Automated Business Technologies '86. Contact: James Ramsey, Automated Business Technologies '86, Suite 386, 8532 Commonwealth Ave., Buena Park, Calif. 90621.

JANUARY 6-9, ANAHEIM, CALIF. — ATE West '86. Contact: Morgan-Grumman Exposition Group, 1050 Commonwealth Ave., Boston, Mass. 02215.

JANUARY 6-10, SAN FRANCISCO — Writing Procedures, Policies and Documentation. Contact: Mary Ann Cluggish, Information Mapping, Inc., 275 Wymann St., Waltham, Mass. 02154. Also being held Jan. 27-31 in Orlando, Fla.; Feb. 3-7 in Dallas; and Feb. 10-14 in Washington, D.C.

JANUARY 7-8, BOSTON — Writing Management Reports. Contact: Mary Ann Cluggish, Information Mapping, Inc., 275 Wymann St., Waltham, Mass. 02154.

JANUARY 8-11, MILWAUKEE — Mini and Microcomputer Concepts. Contact: John T. Sreedeker, University of Wisconsin at Milwaukee Extension, 929 N. Sixth St., Milwaukee, Wis. 53203.

JANUARY 9, DEDHAM, MASS. — Elements and Applications of Microcomputers in the Graphic Arts Industry. Contact: Frank H. Trocki, Director, Graphic Arts Program, Northeastern University Center for Continuing Education, 370 Common

See CALENDAR page 54

NEWS

CALENDAR from page 53

St. Dedham, Mass. 02006. Also being held Jan. 16 and 30 and Feb. 6 in Dedham.

JANUARY 9, IRVINE, CALIF. — International Computer Conference. Contact: Susanne Hubner, U.S. Conference Director, Invitational Computer Conference, No. C-2, 8151 Airway Ave., Costa Mesa, Calif. 92626. Also being held Jan. 28 in Austin, Texas and Jan. 30 in Dallas.

WEEK OF JANUARY 13

JANUARY 12-14, KEY BISCAYNE, FLA. — The Outlook for Computer Printers. Contact: Gail Montgomery, Institute for Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02116.

JANUARY 13-15, ATLANTA —

Telecommunications Management. Contact: Business Communications Review, 960 York Road, Hinsdale, Ill. 60521.

JANUARY 13-15, WESTBORO, MASS. — A Structured Approach to Software Testing. Contact: Central New England College, 3 Westboro Business Park, Research Drive, Westboro, Mass. 01581.

JANUARY 13-17, MILWAUKEE — Microprocessor Hardware and Software — An Introduction. Contact: John T. Snedeker, University of Wisconsin at Milwaukee Extension, 929 N. Sixth St., Milwaukee, Wis. 53203.

JANUARY 14-16, KEY BISCAYNE, FLA. — Thermal Printing. Contact: Gail Montgomery, Institute for Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02116.

JANUARY 14-16, LONG BEACH, CALIF. — Annual Battery Conference '86. Contact: Rita Johnson or Jane Doherty, Annual Battery Conference, Department of Electrical Engineering, California State University, 1250 Bellflower Blvd., Long Beach, Calif. 90840.

JANUARY 15-16, SAN JOSE, CALIF. — Buscon '86. Contact: Anne Weber, Bus Users Show and Conference '86, Suite 118, 17100 Norwalk Blvd., Cerritos, Calif. 90701.

JANUARY 15-17, DENVER — Usenix Technical Conference. Contact: Usenix Conference Office, P.O. Box 385, Sunset Beach, Calif. 90742.

JANUARY 16, NEW YORK — CDLA Regional Reception. Contact: Manager of Convention Planning, Computer Dealers and Lessors Association, Inc., 1212 Potomac St. N.W., Washington, D.C. 20007.

JANUARY 16-18, SAN FRANCISCO — Macworld Exposition. Contact: World Expositions, Mitch Hall Associates, P.O. Box 860, Westwood, Mass. 02090.

WEEK OF JANUARY 19

JANUARY 19-22, DALLAS — Forum '86. Contact: Recognition Technologies Users Association, P.O. Box 2016, Manchester Center, Vt. 05255.

JANUARY 20-21, ARLINGTON, VA. — Ada. Contact: Specialized Training Services, Inc., P.O. Box 1618, Dahlgren, Va. 22448.

JANUARY 21-22, NEW YORK — Introduction to Telecommunications Systems: Technologies and Applications. Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

JANUARY 21-23, SAN JOSE, CALIF. — ASEE '86 — Advanced Semiconductor Equipment Exposition Technical Conference. Contact: Joyce Estill, Exposition Manager, Cartridge & Associates, Inc., M250, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

JANUARY 23-25, SAN DIEGO — 1986 SCS Multiconference. Contact: Society for Computer Simulation, P.O. Box 17900, San Diego, Calif. 92117.

JANUARY 24-25, DEDHAM, MASS. — Copyfitting. Contact: Frank R. Trocki, Director, Graphic Arts Program, Northeastern University Center for Continuing Education, 370 Common St., Dedham, Mass. 02026.

WEEK OF JANUARY 26

JANUARY 29, DEDHAM, MASS. — Newsletter Preparation: Design and Layout. Contact: Frank R. Trocki, Director, Graphic Arts Program, Northeastern University Center for Continuing Education, 370 Common St., Dedham, Mass. 02026.

JANUARY 29-31, BOSTON — How to Select and Implement a Telephone System. Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

JANUARY 29-31, DALLAS — Data Communications I — Basic Concepts. Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

JANUARY 29-31, SCOTTSDALE, ARIZ. — 1986 Robotic Industries Association Annual Meeting. Contact: Robotic Industries Association Headquarters, P.O. Box 1366, Dearborn, Mich. 48121.

JANUARY 30, NASHUA, N.H. — Assertive Management. Contact: Seminar Administrator, New Hampshire College, Resource Center, 2500 N. River Road, Manchester, N.H. 03104. Also being held Jan. 31 in South Portland, Maine.

JANUARY 30-FEBRUARY 1, ORLANDO, FLA. — SEMCOMA '86 Conference and Exposition. Contact: Southeastern Regional Office Machine Dealers Association, Inc., Office, Suite 111, 224 Peters Road, Knoxville, Tenn. 37923.

JANUARY 30-FEBRUARY 2, LAS VEGAS — Healthcare '86 Computers, Telecommunications and Information Systems for the Health Care Industry. Contact: Lin Fish, Fleischman & Linden Expositions Group, Inc., 2401 Plum Grove Road, Palatine, Ill. 60067.

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IN DEPTH

Publishing in-house can sharpen DP image

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- Know thy vendor.
- Start small.
- Plan for a payback period of three years.

By Johanna Ambrosio

As if MIS directors didn't have enough to think about, here comes one more responsibility: corporate electronic publishing.

This just might, however, be a job welcomed by MIS. If handled properly, the computer publishing phenomenon can offer a chance to wow top corporate management while not getting stuck with day-to-day details.

Corporate electronic publishing is the creation and publishing of documents inside companies other than bona fide publishers. Corporately published documents are generally created for the support of other products and include brochures, catalogs and service manuals.

Corporate electronic publishing can help reduce money spent on outside suppliers, produce more timely publications and allow for greater control over document quality.

Johanna Ambrosio is a Queens, N.Y.-based free-lance writer specializing in technology and business.

"Electronic publishing is distinct from ordinary correspondence because it requires a higher level of typographic sophistication such as graphics and changes in type styles and sizes," says Gregory Van Buren, director of research and simulation for Interconsult, Inc., a Cambridge, Mass., consulting firm.

If the document can be produced with a letter-quality printer and a word processing package, it does not represent a corporate electronic publishing effort. The necessary components for corporate electronic publishing include the following:

An input device used to create the document, such as a personal computer or terminal hooked to a mainframe.

Text-processing software that allows the raw input to be massaged into production-quality copy with various type fonts and sizes.

A hard-copy device such as a laser printer or typesetter.

This list, of course, describes the most basic level of corporate electronic publishing. Other possible components could include computer-aided design (CAD) systems, graphics workstations, color-image systems and optical-character recognition scanners to input printed material that has been created elsewhere.

To date, few companies have taken the in-house publishing route. But the benefits of corporate electronic publishing will entice approximately 2,000 companies to invest in systems in the next two years, Van Buren estimates. Cumulative computer publishing revenue will total \$4 billion to \$12 billion by 1987 and more than \$50 billion by 1990.

The revenue accrues to a variety of vendors, including personal computer manufacturers, software and laser printer vendors that may or may not be specifically identified as electronic publishing vendors. The recent excitement over low-cost laser printers has not driven the electronic publishing market so much as it has brought high-quality publishing to users' attention.

Wait is over

Not everyone agrees with those predictions. Joe Ramon, publisher of the "Wysiwyg (What-You-See-is-What-You-Get)" newsletter on computer publishing,

IN DEPTH/CORPORATE ELECTRONIC PUBLISHING

believes that Interconsult's figures are too high. But he does agree that electronic publishing's long wait to become a viable market is over.

"The electronic publishing industry is beginning to come alive," Ramos says, and more user firms will invest over the next two years as the benefits of corporate electronic publishing become better known through word of mouth and through users groups and trade shows. Indeed, corporate electronic publishing is an idea whose time has come, if one considers what Fortune 1,000 companies already spend on publishing — between 6% and 10% of their revenues, Van Buren points out.

Lack of control

Yet many firms are not aware of the inefficiency of their publishing expenses. At least half of the companies Van Buren's firm inter-

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is an organization, one or more technical groups, the DP documentation unit and the marketing area all use in-house electronic publishing.

viewed for a recent study did not specifically track dollars spent on publishing.

Furthermore, millions of dollars spent on electronic publishing equipment never serve that purpose because the gear is not purchased with electronic publishing in mind. Laser printers, for example, are often seen as replacements for line printers when they can also be used as publishing output devices.

The problem is that corporate electronic publishing equipment — in one form or another — is spread out across many departments in most companies, with no central point of control. In a given organization, one or more technical groups, the documentation unit within data processing and usually the marketing department all use in-house electronic publishing in some form.

Furthermore, each of these groups believes it should retain control of the system. But as electronic publishing gains a stronger foothold in the corporate environment and the system grows larger and becomes more integrated with other installed computers, MIS is seen as the logical choice as a coordinator.

Oiling the system

But MIS must overcome several problems before cor-

porate electronic publishing becomes a well-oiled machine.

Difficulties stem from the unplanned, grass-roots origin of most in-house publishing efforts. Because in-house publishing staffs do not occupy a specific place in corporate planning, they generally lack a capital-equipment budget. Instead, the in-house publishing group is dependent on an operating budget for paper, ink and personnel costs.

Besides not being able to purchase new equipment, this group has often inherited methods that are not cost-effective. "These people are so busy publishing that they don't even know what's available to them," Ramos says.

MIS' role

By stepping in and elevating the publishing function's position within the organization, MIS can help the firm save money. The MIS staff

can direct higher level management attention and techniques toward turning corporate electronic publishing into the effective tool it should be.

Of course, by doing so, MIS staff members become heroes to top management, which generally functioned unaware of the problem.

MIS can sell the corporate electronic publishing concept to the executives while allowing the people who have always run the publishing

area to continue. This approach spurs MIS the day-to-day control problems, consolidates the publishing function into one distinct entity and hopefully solves the publishing staff's capital-expenditure problems.

Another possible organizational structure draws together one centralized publishing staff, with some publishing gurus remaining in user departments that generate heavy electronic publishing requirements.

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Keeping you ahead

Each of Data General's breakthroughs is compatible with all that

IN-DEPTH/CORPORATE ELECTRONIC PUBLISHING

Early users are trying out different approaches to corporate electronic publishing. One, Caterpillar Tractor Co. in East Peoria, Ill., maintains a centralized electronic publishing department.

Corporate mandate

Caterpillar's Communications Services Division, which falls under the auspices of the company's marketing group, administers the department.

Caterpillar reorganized

the Communications Services Division in August and gave the division a corporate-wide mandate for electronic publishing, explains Jerry Metzsell, supervisor of

the division's systems section.

Before that time, his unit was part of the technical publications group that handles service manuals and op-

erating guides.

"We realized we possess technology that the rest of the company can use," Metzsell points out. Now, his division, which works closely

with but does not report to MIS, handles all of the company's publishing, including the parts catalogs and brochures sent to Caterpillar's dealers.

The reorganization created a lot of interest in the corporate electronic publishing program, Metzsell emphasizes. "We used to have to go to users and say, 'Look what we can do for you.' Now they come to us and ask for help reducing costs," he notes.

Metzsell's group created a corporate electronic publishing system by adding equipment to the Ates, Inc. text processing system in use since 1976.

Lazard Freres & Co., a New York-based investment banking firm, installed a corporate electronic publishing system earlier this year.

The firm uses a small publishing system run by a secretary in one of the divisions. The system, made by Interleaf, Inc., has been installed since January.

A panel of end users, in this case investment bankers, wrote the specifications for the system and made the final system selection, according to Hamish Norton, an associate in Lazard Freres' corporate finance department who had a hand in the selection process.

Credibility boost

The user panel decided it wanted a corporate electronic publishing system to improve the quality of its presentations to new clients.

Lazard's needs emphasized the intangible benefits of electronic publishing more than the bottom line, based in part on studies that show how credibility is boosted by typesetting documents.

With an in-house publishing system, many documents that were traditionally produced on a daisywheel or matrix printer will now be easily typeset.

Another point to consider, for those documents that were once simply printed, is cost: saving on ink and paper. Since typeset copy takes up about 45% less space than information from a line printer does, the same document will require fewer materials to be produced on an electronic publishing system.

Once the panel reached its decision, the person in charge of computational services narrowed the selection down to several specific equipment vendors. "He was familiar with the state of the art; we were familiar with what we needed," Norton says.

Besides giving the panel the names of possible vendors, the DP person acted as the liaison between end users and top management.

"He helped explain the decision to the people who ultimately had to approve it," Norton adds.

Lazard's needs emphasized the intangible benefits of electronic publishing more than the bottom line, based in part on studies that show how credibility is boosted by typesetting documents.

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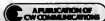
But hurry, the closing for the January 15th Communications issue is December 6th.

Computerworld Focus Topic	Issue Date	Closing Date*	Show Distribution
Communications	January 15**	December 6	Comnet
Software	February 19	January 10	
Manufacturing	March 19	February 7	Advanced Manufacturing
Microcomputing	April 16	March 7	Comdex/Spring '86
Office Automation	May 14	April 4	HCSA, HCC
Software	July 9**	May 30	PC Expo, Software Expo
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Communications	September 17	August 8	TCA
Office Automation	October 8	August 29	Info '86
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COMPUTERWORLD FOCUS

We Put The Hottest Issues Of The Day In Focus

IN DEPTH/CORPORATE ELECTRONIC PUBLISHING

80% to 90%. About 10 stand-alone units are functioning already. Before the workstations were installed, employees would write out documents by hand on legal paper and give the page to secretaries to type.

Limitations

Despite the advantages of corporate electronic publishing, users should be wary of some limitations. At Caterpillar, the publishing staff still must paste in drawings and photographs manually, leaving spaces for them on the electronically created layout. "We haven't found a cost-effective way of [entering them] with an automated method," Meisziel says.

Furthermore, most in-house publishing systems available today handle only black-and-white documents because of the dearth of color image-

The corporate electronic publishing industry itself is fragmented, with many vendors trying to get dibs on an emerging market.

processing technology and because of the high costs of four-color printing. A basic color system can sell for upwards of \$1.3 million, in contrast to the \$50,000 cost of a black-and-white unit.

"Color is prohibitively expensive at the moment; you need incredibly high volume to justify it," Interconsult's Van Buren says.

And the corporate electronic publishing industry itself is fragmented, with many vendors trying to get dibs on an emerging market. Traditional

electronic publishing vendors such as Atex have been joined by numerous startups. Relatively new companies such as Interleaf, Xyvision, Inc. and Textet Corp. have become very successful, one reason some observers feel corporate electronic publishing's time has come.

Joining the fray are the computer-systems vendors. In April, Xerox Corp. introduced its XPS 700 corporate electronic publishing system, a hardware/software system based on the Xerox 8700 laser printer.

Currently, Digital Equipment Corp. offers Decpage typographic composition software for its VAX family of computers. Apple Computer, Inc.'s Macintosh Office System offers a typographic option with its Laserwriter printer and accompanying software, also.

Analysts agree most systems vendors, including IBM, AT&T and Wang Laboratories, Inc., are expected to jump into the market, possibly within the next year or two.

Watch and wait?

A large user may be well advised to wait until the major manufacturers "bless" the market, simply because of the integration issues, Van Buren says. A major computer vendor, especially one with which users already do business, may be better equipped to link existing computers



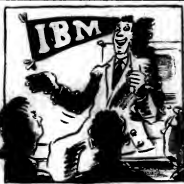
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to the corporate electronic publishing system.

However, some observers feel that the electronic publishing systems already on the market adequately handle the integration problems.

"Most can accept ASCII code files from computers and can output to typesetters and laser printers," Ramos says. On the other hand, some users feel that companies that have been in the business for a while know it better than ones who enter later on.

There is another reason large users might be wary of purchasing certain publishing systems right now. Analysts expect a major shake-out in the corporate electronic publishing industry by late 1986 or early 1987. "I don't see a way for everyone to win," Van Buren says.

Despite the risks, if a user firm needs a corporate electronic publishing system relatively quickly, it can reap substantial benefits in a short time by attending to certain guidelines:

- Know thy vendor. Understand a vendor's track record in terms of how the company will withstand a shakeout.

- Plan for a payback period of three years, to avoid possible problems over the long term.

- Start small. As Ramos says, "There's no need to spend \$70,000 for a system right away. Buy some software packages first, for \$3,000 or so, to find out what corporate electronic publishing can mean to your business."

Technical advances

As users decide whether in-house electronic publishing is worth their time, money and effort, the technology itself will undergo some changes. Anticipated developments include electronic publishing systems based on personal computers instead of higher cost workstations.

The major stumbling blocks until now have been personal computers' smaller memory, lack of power and slower response time. But, Van Buren points out, manufacturers can get around most of these obstacles with Intel Corp.'s new 80386 chip, which he calls the real news in the electronic publishing industry. "[The chip is] a tool that can address 90% of the corporate publishing applications," he declares.

Other related technologies that will continue to improve include scanners that do not degrade an entire system's performance and better methods of storing and compressing graphics. And, naturally, some overall computer industry predictions hold true for corporate electronic publishing as well: more power, lower prices and better performance. ■

IN DEPTH



Trojan horse rolls up to DP gate

By Earl Boebert, Richard Kain and Bill Young

Design flaws leave many multiuser systems vulnerable to hidden attack by programs that make clandestine copies, corrupt stored text or scan input for critical documents to destroy. Standard access control precautions fail to detect these intruders.

Most computer systems are secure only in the sense that they have not yet been compromised or in that the methods by which they can be compromised are known to only a small, select group of individuals.

There are, broadly speaking, three classes of risks to information in a computer system: There may be accidental flaws an exploiter can attack; flaws may have been deliberately introduced; or the design may be fundamentally flawed.

We can make an analogy with aircraft safety: An aircraft can be unsafe because of faulty workmanship or maintenance; it may have been sabotaged; or its design could be inherently unsafe — for instance, its center of gravity might be improperly placed.

In both airplanes and computers, the first two classes of flaws are rich in detail and relatively barren of principle; they can

be counteracted by diligently applying various quality-assurance techniques. But no degree of diligence in workmanship and inspection can overcome an inherent flaw in design.

Inherent flaws in aircraft design tend to fall into general categories, such as structural weakness or aerodynamic instability. In the case of computer systems, the richest category of design flaws leaves the system open to what are called Trojan horse attacks.

An Illusion

To understand the workings of a Trojan horse attack, it is first necessary to note that all knowledge one gains about a computer system is gained indirectly; there is no directly observable physical reality whatsoever. The relation between man and machine has been characterized as a "computer-enhanced hallucination" because responses in human minds are triggered by events inside the machine that are not themselves directly observable.

Consider the difference between a mechanical typewriter and a computerized word processor, two machines that accept keystrokes and convert them into visible text.

In the typewriter, a direct and observable mechanical connection exists between

Earl Boebert is Senior Fellow at the Honeywell Secure Computing Technology Center (SCTC), Minneapolis. Richard Kain is a professor of electrical engineering at the University of Minnesota and serves as a consultant to SCTC. Bill Young is a SCTC researcher and a doctoral candidate in computer science at the University of Texas at Austin.

IN DEPTH/SYSTEMS SECURITY

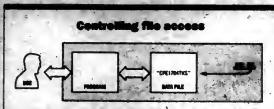


Figure 1. The access control list is the means by which most computer systems attempt to protect sensitive data. Associated with each data file is an access control list that pairs a user or group of users with allowed modes of access. In this case, user Doe, attempting to protect the critically sensitive character string "CPE1704TKS," has set the list for the file to allow read/write access to programs accessing on his behalf and no access to programs acting on the behalf of other users.

a given keystroke and the appearance of the corresponding letter. In the word processor, no such observable link exists. An intermediary, or agent, in the form of a computer program performs the transformation; the actions of this agent cannot be directly observed by the user of the machine. Indeed, the agent's reliability is established only by experience; every key pressed so far has displayed the corresponding letter.

Experience may convince the user that the machine is correctly performing its intended function. There is, however, no assurance whatever that the program inside the word processor is not performing extra tasks hostile to the interests of the user: making clandestine copies, corrupting stored text or scanning input for indications that a critical document is being prepared and then de-

stroying the document when it is completed. This is the first element of a Trojan horse attack: agents in the form of computer programs, the actions of which are visible indirectly, if at all.

The second element is a computer organization in which several such agents operate on data simultaneously. This organization — variously called resource sharing, time sharing or the multuser approach — was originally used for only the largest hardware sets. The rapid decline in hardware costs has allowed it to be applied to computer hardware costing as little as \$5,000.

Spreading the benefits of multuser computing (such as lower computational cost, flexible access and the ease with which data can be shared) has also meant expanding the domain in which Trojan horse attacks are possible and increasing the threat they pose.

Access control

The designers of even the earliest multuser systems recognized the need to control the sharing of data, if only to limit the damage faulty programs could cause. The standard mechanism for such control has been the access control list.

There are two parts to this mechanism. First, users are required to identify themselves by name (and, generally, by secret password) before they can invoke a program; the system therefore knows at all times on whose behalf a program is executing. Second, every unit of data, such as a file, has an associated list of paired attributes of the form name access. A set of such pairs forms the access control list for the unit of data.

The name portion of an access control list entry is the name of a user, and the access portion defines the modes of data access that programs executing on behalf of that user are permitted to use.

For the sake of illustration, we shall assume that the possible data access modes are read, which means that a program can examine data in the file; write, which means that a program can alter data; read/write, which means that it can do both; and null, which means that it can do neither.

Before permitting a program to access data, the system searches the access control list associated with that data for an entry containing the name of the user on whose behalf the program is running. If such an entry is found, the system allows only those modes of access granted by the access portion of the access control list entry. If no such entry is found, all access is denied.

This arrangement appears intuitively secure to many observers. Unfortunately, the computer security field is rich in results that are counterintuitive and dimming to system designers. In this case, a description of the workings of a Trojan horse attack shows that the access control list mechanism is fundamentally and fatally flawed.

Consider the situation shown in Figure 1. Doe, a user, interacts, through a program, with a data file containing the critically sensitive character string "CPE1704TKS." Doe has diligently applied the access control list mechanism to ensure that only programs executing on his own behalf can gain access to the sensitive file.

BRING BUGS TO LIGHT



Raiding files

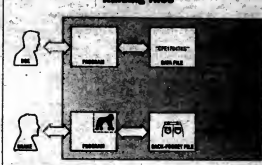


Figure 2. A hostile user, Drake, proposes a raid on Doe's data by installing a Trojan horse program and a private file. The program has two functions. One is innocent and visible to the user who invokes the program; the other is hostile and invisible. The private file serves as the "back pocket" during the attack. Drake sets the access list on this file to allow programs executing on his behalf read/write access and programs executing on Doe's behalf write access only.

Hiding stolen data

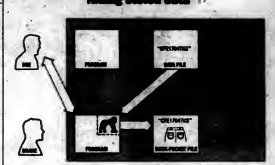


Figure 3. The Trojan horse program is designed to detect when it is being executed by user Doe. When Doe unwittingly invokes the program, it acquires read/write access to his file and writes access to Drake's back-pocket file. The Trojan horse code within the program surreptitiously reads Doe's files and writes their contents to Drake's back-pocket file. Drake then has only to read his file later to learn the value of the critically sensitive character string.

The Trojan horse attack begins when a hostile user, when we shall call Drake, gains legitimate access to the system and installs both a Trojan Horse program and a private file to be used in the attack as a "back pocket" where data is stored in secret.

Drake sets the access control list of this private file to allow full access to programs executing on his behalf and to allow programs executing on Doe's behalf to write into the file. Drake is careful not to notify Doe of this fact. This situation is shown in Figure 2.

Drake now induces Doe to invoke the Trojan horse. The inducement can take any one of a number of forms. Drake might, for example, implant the Trojan horse code in a useful utility program or an entertaining game. When the Trojan horse detects that the program in which it is embedded is being executed on Doe's behalf, it copies the critically sensitive character string from Doe's file to Drake's.

This copying, depicted in Figure 3, takes place completely within the constraints imposed by the access control list mechanism; that is, it happens even if the mechanism is flawlessly implemented and correctly used. Drake then has only to access his file at some later time to learn the value of the character string.

This example should make clear the principle and effectiveness of Trojan horse attacks. The attacks represent the improper use of property granted rights by a subverted agent whose actions cannot be directly observed.

A particularly dangerous form of Trojan horse is the so-called virus program, which embeds a copy of itself in other programs, thereby propagating throughout a system and even over a computer network. A virus has to be invoked only once to infect the other programs commonly invoked by the target user. Thus, one invocation allows the virus to obtain frequent invocation and opportunity to create havoc.

Attack prevention

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IN DEPTH/SYSTEMS SECURITY

could rapidly find and replace all instances of its use once the property was named. No name was ever devised, and so the report was published with the "XXX" intact.

The Simple Security Property states that a referenced monitor shall grant a subject read access to an object only when the security level of the subject is greater than or equal to (dominates) the security level of the object. The "Property states that write accesses shall be granted only when the security level of the object being written to is greater than or equal to the security level of the subject doing the writing.

Together, the two properties restrict the access of subjects to objects to reading down or writing up. Since the only way to obtain the information stored in a computer system is to access an intermediary object, the combined effect of the two properties is to ensure that information can only flow up.

We shall now return to our example, interpret a reference monitor, assign security levels to subjects and objects and show how the system organization that results is secure against Trojan horse attacks.

Security levels are typically assigned to subjects at login on the basis of criteria such as the terminal from which the machine is being accessed and the user associated with the subject. The user's identity is generally confirmed by knowledge of a secret password. The mechanisms described here do not guard against lost or stolen passwords, just as no lock guards against a purloined key.

The system organization is illustrated in Figure 4. There are two security levels, sensitive and public, ordered so that sensitive is greater than public. Subjects executing on Doe's behalf and the file containing the important character string are assigned the sensitive security level. The file and subjects executing on Drake's behalf are restricted to the public security level.

The illustration in Figure 5 shows what happens when Doe unwittingly invokes the Trojan horse program. As before, the program acquires the privileges associated with Doe and runs at sensitive security level. It is therefore able, under the Simple Security Property, to observe the character string "CPFI7047ES."

When the program tries to store the string in a public file, however, the "Property is violated, and the attempt is disallowed by the reference monitor. Thus, one link of the Trojan horse copy-and-observe-later chain is broken. One can easily verify that the rules frustrate the other two possibilities: Drake logging on and trying to read the string directly and his assigning a security level of sensitive to the back-pocket file.

Note that the illustrated system, like most real systems, retains the access control list mechanism. The enforcement of the mandatory security policy as interpreted by the Bell and La Padula model takes precedence over the access list mechanism. For example, the attempt to copy into the back-pocket file is denied, even though the list permits it. The access control list mechanism, which is also called the discretionary access policy, is kept primarily as an administrative convenience. It allows a user to restrict object access to a subgroup of the subjects that would be granted access under the mandatory security policy alone. ■

"A subject at a high level may not convey information to a subject at a lower level unless that flow reflects the will of an authorized user."

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NEW PRODUCTS

Telex offers intelligent workstations

Telex Computer Products, Inc. of Tulsa, Okla., has unwrapped two intelligent workstations aimed at the IBM 3870 market. The 1280 and 1280 models in the company's Intelligent System series, running under Microsoft Corp.'s MS-DOS operating system, are said to feature IBM Personal Computer XT and AT compatibility, respectively.

The Telex 1280 incorporates an Intel Corp. 80186 microprocessor with an 8-MHz clock rate. It comes with 256K bytes of memory, expandable to 640K bytes. The 1280 includes a diskette controller that can support up to two 360K-byte floppy disk drives. An optional fixed-disk controller that costs \$250 supports up to two fixed-disk drives of either 10M, 20M or 40M bytes.

The 1280 model costs \$3,830 in a typical configuration that includes a 12-in. monochrome monitor, two 360K-byte diskette drives and keyboard. The basic unit with 256K bytes of memory costs \$2,485.

The 1280 includes an Intel 80286 microprocessor with 512K bytes of main memory, expandable to 2.1M bytes on the system memory board. An optional memory expansion board brings total available memory up to 4.8M bytes. The unit can be configured with up to four internal storage devices. The diskette fixed-disk controller supports two diskette drives and up to two fixed disk drives in 10M, 20M or 40M bytes.

The 1280 model costs \$5,856 in a typical configuration that includes a monitor, a 1.2M-byte diskette drive, a 30M-byte fixed disk and keyboard. The basic unit with 512K bytes of memory costs \$2,960.

Both units come standard with single serial port and parallel ports. The 1280 has six 8-bit expansion slots available. The 1280 has six available expansion slots accommodating up to four 16-bit and two 8-bit adapter boards. A socket for an Intel 8087 numeric coprocessor is available on the 1280 (the coprocessor costs an additional \$300), and a socket for the Intel 80287 numeric coprocessor is available on the 1280 (the coprocessor costs \$375).

Tominy introduces Mach 1

Applications generation system automates design

Tominy, Inc. of Cincinnati has introduced Mach 1, an applications generation system said to automate the development process and reduce maintenance needs.

Mach 1 allows data base design to be developed through a logical data base structure and data directories that establish standardized edit criteria for the data fields. Mach 1 reportedly allows both designers and end users to design screens and menus in minutes. The screen fields are then mapped to the data directory, the vendor said.

Mach 1 offers a report handler featuring forms control, page handling and report headings all external to program logic. There is a Query/Report Generator that can be used to generate a report in 10 to 30 lines of English code. Mach 1 also offers interactive testing, allowing the developer to

change variables and inputs to the procedural logic code without compiling. The logical module is compiled after testing.

Other features of Mach 1 include a data maintenance program generator, a fourth-generation procedural logic language, Help facilities, program security, job stream and menu access.

According to the vendor, Mach 1 is portable over 20 different environments from mainframes to micros. Code does not need to be recompiled, and the job stream does not need to be changed.

Prices range from \$2,500 for a single-station microcom-

The Mach 1 is said to automate development and reduce maintenance needs.

puter to \$28,000 for a minicomputer such as the Digital Equipment Corp. VAX to \$72,000 for an IBM mainframe. The mainframe must have IBM's CICS. There is a standard \$2,000 installation and training fee, the vendor said.

Usernet enhancements debut

Sperry Corp. of Blue Bell, Pa., has enhanced its Usernet system local-area network for personal computers.

Enhancements include two expanded models of data/print servers: the DS 300, suited for configurations requiring up to 30M bytes of disk storage, and the DS 220, intended for networks requiring up to 180M bytes of disk storage per server.

The Usernet Software/86 Network Operating System, running under the control of Microsoft Corp. MS-DOS is required for each server attached to the network. Sperry's 3270 Systems Network Architecture (SNA) Protocol Communications Server software enables users connected via Usernet to operate under IBM's SNA.

The Archival Tape Subsystem is a free-standing cartridge tape unit that can store up to 64M bytes of information. The Usernet Disk Station Package is a stand-alone

office automation application including writer/speller, calculator and filer.

The system uses a Sperry PC, Sperry PC/XT, Sperry PC/AT or IBM-compatible personal computer as a data/print server for monitoring the network's workstations and acting as the central storage device of both data and applications programs.

The Usernet Software/86 package includes network operating software, a feature board and documentation and is priced at \$1,995. The DS 220 and DS 300 data/print servers include the Usernet Software/86 package and are priced at \$4,727 and \$9,722, respectively.

The Usernet 3270 SNA Communications Server software is priced from \$1,995 to \$5,995, and the Usernet Station Package is priced from \$1,500 to \$4,000, depending on the number of users. The Archival Tape Subsystem is priced at \$4,445.

IBM system analysis tool out

IBM has announced CICS/OS/VS Performance Analysis Reporting System (CICSPARS/VS), designed to provide systems programmers, systems analysts and CICS/OS/VS operators with information to manage the performance and accountability of CICS/OS/VS Version 1 Release 7 systems.

CICSPARS/VS is said to provide on-line display capabilities, system-alert monitoring functions, problem determination aids and extensive batch reporting. It also incorporates functions previously provided by the CICSPARS, Performance Analyzer II and Generalized Performance Analysis Reporting for OS programs.

Other features include optional graphics displays, effective use of

IBM 3270 display capabilities, comprehensive help facility and extended addressing support.

The minimum configuration for CICSPARS/VS is an IBM 370 supporting MVS/370 or MVS/XA with CICS/OS/VS Version 1 Release 7, a nine-track tape drive, DASD tape storage, one 3270-type terminal or a 3277 terminal supporting graphics for the optional color graphics. Prerequisites are IBM CICS/OS/VS Version 1 Release 7, IBM DFSORT or its equivalent, IBM GDW or its on-line graphics displays are desired and IBM SMP/2 or SMP Release 4.

CICSPARS/VS is available for a monthly charge. The basic license is \$800 a month. A distributing site license option costs \$675 per month.

Compuscan announces two desktop OCR scanners for data transfer

Compuscan, Inc. of Fairfield, N.J., has introduced two optical character recognition (OCR) desktop scanners that reportedly transfer data into the IBM Personal Computer.

The Compuscan PCS 230 enters text into the micro while the PCS 240 adds image scanning to OCR to transmit both text and graphics.

Both models reportedly perform OCR operations at 30 seconds per page. Included software allows full formatting for most leading IBM PC/OS-based word processing programs. Several different type styles and fonts are supported.

The PCS 240 reads and transmits text at 12 seconds per page, with

software-selectable resolution of 200, 150 or 100 dot/in.

The PCS 230 and 240 each require a minimum of 512K bytes of internal memory and a parallel interface port. They are compatible with mouse support and several different graphics boards for the PCS 240. Cost of the scanners is \$5,995 for the PCS 230 and \$5,995 for the PCS 240.

Information appearing in the New Products section has been provided by manufacturers and has not been independently validated by Computerworld.

INSIDE

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ONLY A NETWORK THE CENTER OF YOUR EXPANDING

A local area network. Sure it can integrate some of your stand-alone equipment. But what about the departmental systems you have? And what about next year? Will it be able to handle new applications that come along? Can it grow? Is it a long-term solution or just a quick fix?

The Information Systems Network from AT&T is the data network that can meet your immediate and long-term needs. It's the only network open and flexible enough to integrate the equipment and systems you have now and willingly accept what the future might bring. It's the data network that can expand with your business—grow from a local to a corporate-wide network.

You can build a strong foundation

Different systems—Incompatible hardware from different vendors—A few stand-alone pieces here and there—ISN can tie it all together.

ISN's open architecture lets it act as the backbone data network that integrates your disparate systems and smaller networks.

Its unique wiring system of twisted pair and fiber optics allows ISN to support the equipment you have now, and the equipment you'll buy later. You can easily and economically add and rearrange equip-

ment. Plus, no matter how far apart devices are, with ISN, you still get maximum network performance.

So once your backbone network is in place, the possibilities are endless. Grow upward, outward, backwards and sideways. With ISN, your options are always open.

You can break the ties that bind you

At the local level, ISN is a hierarchical star network with a fast-switching Packet Controller at the hub. The Packet Controller is linked to all devices in your network and manages all network communications.

So ISN can set up communication links between all your equipment and systems. AT&T System 86 and AT&T System 76 PBXs, mini-computers and mainframes, isolated Ethernet systems, AT&T STARLAN NETWORK and SBNET, smart and dumb terminals, even equipment from IBM—ISN gets it all on speaking terms. All sharing the same resources. All working even harder for you.

ISN even protects your 8270 investment. It lets your Baysic terminals access multiple IBM® hosts. Low-cost dumb terminals and personal computers do the same. Synchronous and asynchronous traffic can travel through your network with the same speed and efficiency.

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THIS OPEN AND FLEXIBLE CAN BE UNIVERSE.

With ISN, you're never locked in to one vendor or one location. Since ISN uses the same technology for local and wide-area networking, its growth potential is limitless.

Linking multiple Packet Controllers lets you start with one ISN and grow across a premises. Add another ISN and grow across the city, or across the country. There's nothing holding you back.

You can handle it all

No matter how large your network becomes, ISN still provides fast, reliable communications between all users. With a high backbone and fiber rate of 8.64 mbps, and a very efficient packet structure, ISN maintains a high throughput rate even when traffic is at its peak.

Long messages or bulky transmissions—ISN's been engineered to handle it all. A unique centralized short bus and perfect scheduling access method permit messages to travel through the network almost instantaneously. And arrive with their integrity intact.

Premises-wide or nationwide, ISN puts you in command. No matter how large your network gets, you choose the means of control—centralized or distributed.

With ISN, you're the boss. You decide who has access to network

resources. No matter what system a user is on, ISN lets you control user access to shared information. Confidential data is always secure.

You've made the right connection

AT&T has a long history of solving complicated networking problems with clear-cut, intelligent solutions. We make the pieces fit.

And we work with you every step of the way. Our professional sales and service people are trained to plan, design and maintain a network that will meet your business needs.

ISN reflects AT&T's better approach to office networking. To learn why it's the right choice for your business, call your AT&T Information Systems Account Executive, or 1 800 247-1212.



AT&T

The right choice.

NEW PRODUCTS/SOFTWARE & SERVICES

Systems software

J. Calder & Associates, Ltd. has introduced *Cumics*, a custom manufacturing inventory control system for the IBM System/34 and 36.

Cumics controls all stock types from marketing to scheduling, engineering, purchasing, receiving, production and shipping.

The system can manage part variation throughout these stages, thereby eliminating the need to fill out special forms for each part that varies from the standard list.

The basic *Cumics* system consists of 144 programs and generates more than 80 reports.

The system is priced at \$40,000.

J. Calder & Associates, Suite 212, 9906 120th St., Delta, B.C., Canada V4C 6S1.

Gejac, Inc. has released Version 3 of its *SRP* Software Performance Monitor for Digital Equipment Corp. VAX and PDP-11 computers.

Version 3 was designed for the RSX-11M or RSX-11M+ operating systems. New features include the ability to display real-time bar graphs that show the amount of activity on the system, to monitor and report on secondary pool usage statistics, to generate noninteractive reports, to monitor up to 300 tasks

and to overlay data collection tasks.

SRP Version 3 may be licensed for \$3,905 on RSX-11M and \$4,405 on RSX-11M+.

Gejac, P.O. Box 188, Riverdale, Md. 20737.

Productivity aids

DGC, Inc. has announced *Produce/38*, a software tool for the IBM System/38.

Produce/38 contains 18 functions, 15 new System/38

commands and three System/38 subprograms.

The commands include enhanced capabilities for modifying job descriptions, physical and logical files and system values. The three subprograms can be called from any System/38 high-level language. There are two data subprograms and *Mony*, which can return a character string representation for a specified numeric value.

Produce/38 costs \$295. DGC, 1460 Preston Forest Sq., Dallas, Texas 75230.

Application packages

New Generation Software, Inc. is offering *Fixed Asset System*, a financial applications package for the IBM System/38.

The software provides asset information for one or more companies and divisions. Its functions include corporate, state and federal accountability; location control; transfer, sale and abandonment records; maintenance tracking; depreciation forecasting; monthly and annual reporting; investment tax credit reporting; and audit trails.

Fixed Asset System costs \$12,500.

New Generation Software, 3840 Rosin Court, Sacramento, Calif. 95834.

SAS/AF, SAS/ETS, SAS/OR, SAS/ETS and SAS/IML — five SAS system software modules — were ported to Digital Equipment Corp. VAX 8600 and PDP-11/700 computers in Version 5 from SAS Institute, Inc.

SAS/AF is an applications development facility. SAS/OR is the SAS project optimization module. SAS/ETS offers procedures for planning, forecasting, financial modeling plus row-and-column reporting. SAS/IML operates on value matrices and can transcribe formulas from matrix algebra notation into SAS/IML statements.

First-year corporate licenses cost from \$1,500 to \$5,000 for base SAS software; \$1,500 to \$6,000 for SAS/Graph; \$1,500 to \$4,000 for SAS/AF, SAS/ETS, SAS/OR and SAS/IML; and \$750 to \$2,000 for SAS/IML. SAS Institute, Box 8000, SAS Circle, Cary, N.C. 27611.

Timesart Corp. has upgraded its *Personnel Management System*, *Benefit Plan Administration System*, *Payroll Processing System* and *Claims Processing System*, its IBM mainframe applications software, as well as its data base architecture. Release 2 of its data base architecture adds three table-file utilities.

Release 3 of *Personnel* Continued on page 76

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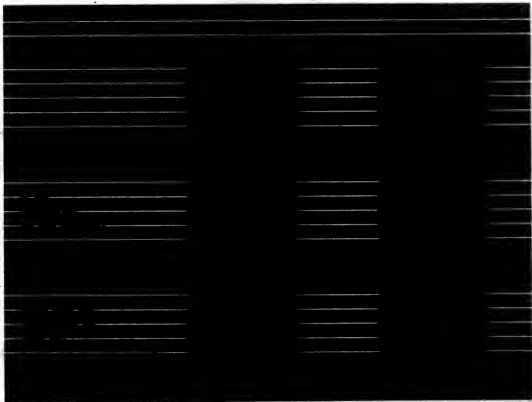
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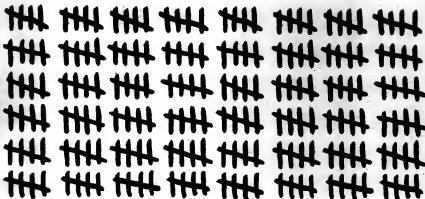
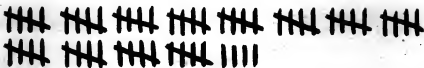
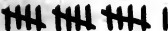
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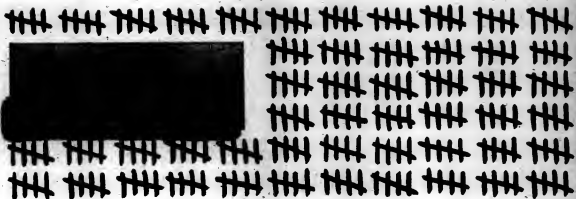
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NEW PRODUCTS/SOFTWARE & SERVICES

Continued from page 74

Management System adds data elements to select access, offers the ability to place employee records in a pending status and duplicate ID checks for use with IMS data bases.

Benefit Plan Administration System Release 4 includes expanded keys in the Benefit Plan Eligibility Table, three additional tables, two extra benefits reports and electronic funds transfer support.

The Payroll Processing System Release 1 allows the base screen to provide data from the Personnel Management System and Payroll as of the effective date.

Release 2.1 of the Claims Processing System allows last-quarter carryovers to apply to both plan and benefit category deductibles and history claim processing to handle claims that span different accumulation periods.

Prices range from \$85,000 to \$185,000.

Telexact, Fifth Floor, 101 Howard St., San Francisco, Calif. 94105.

Data base management systems

Software House, Inc. has released the Large Data Sets module for its System 1022 data base management system for Digital Equipment Corp. Decsystem-10 and Decsystem-20 mainframe computers.

The Large Data Sets module boasts the data set size of System 1022 to 134 million records. The module distributes data sets over several disks.

A System 1022 license costs

\$22,500 to \$73,000, depending on configuration.

Software House, 1105 Massachusetts Ave., Cambridge, Mass. 02138.

Computer Associates International, Inc. has announced Release 5 of its CA-Universe relational data base and fourth-generation management system.

The data base nucleus has been enhanced to provide referential integrity, and the data dictionary has been extended. Both the information management and applications development facilities and the automatic forms-generation facilities have also been enhanced. Other features include extended reporting capabilities and integrated user and system help.

The cost for CA-Universe is \$140,000 in IBM DOS/VSE and \$170,000 in IBM OS/MVS and VMS/CMS environments.

Computer Associates, 125 Jericho Tpke., Jericho, N.Y. 11753.

Remote computing services

ITT World Communications, Inc. is offering ITT Update, a multilingual international news service that is accessible by telex terminals worldwide.

Offered in conjunction with the Deutsche Presse-Agentur GmbH (DPA), the ITT Update provides world news in English, German and Spanish. Users can select news stories by continent and country. DPA supplies stories in the language in

which it was filed. Major stories are translated into all three languages.

International users pay the cost of the telex call when using Update. The cost to domestic users is 20.5 cent/min plus the cost of the telex call.

ITT World Communications, Services Group, 100 Plaza Drive, Secaucus, N.J. 07096.

Training

Crwth Computer Courseware has announced Basic JCL, an interactive computer-based training course designed to teach users, operators and programmers how to run jobs under the MVS operating system.

The course can be run under a computer-based training presentation system such as IBM's IIS, Goal System International, Inc.'s Phoenix or Boeing Computer Service Co.'s Scholar/Teach. Information is presented with interactive narrative text followed by questions. Much of the course involves writing JCL statements and programs.

The course can be leased on a yearly license for \$4,500.

Crwth Computer Courseware, 18th Floor, 10880 Wilshire Blvd., Los Angeles, Calif. 90024.

Software

Scientific Computing Associates has announced Version 3.3 of its PC SCA Statistical System for the IBM

Personal Computer, Personal Computer XT, AT and compatibles.

Version 3.3 features dynamic storage allocation, attention interrupt, access to DOS commands within a system session and access to other software applications within a session.

The entire system is distributed on 13 diskettes. It is priced at \$595.

Scientific Computing Associates, P.O. Box 626, De Kalb, Ill. 60115.

Shields Computer Services has announced PC/Flint, a file organization product for IBM Personal Computers or compatibles.

PC/Flint is an IBM PC-DOS and Microsoft Corp. MS-DOS utility. Features include the ability to sort files, execute commands next to files, pass parameters and perform selective searches. It includes on-line help and search capabilities and user-defined function keys. A browse program allows users to look at files in both ASCII and hexadecimal modes.

PC/Flint is priced at \$29.95.

Shields Computer Services, 5749 Amend Road, Richmond, Calif. 94803.

Boston Business Computing, Ltd. has announced PC/EDT, a software editing tool designed for the IBM Personal Computer and compatibles.

PC/EDT is a personal computer implementation of Digital Equipment

Continued on page 82

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Which includes Xerox 8010 Star

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What's
your
secret?"

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To make Matt's secret yours, call Team Xerox at 1-800-833-2323, ext. 42 or send your business card to

Xerox Corp., Dept. 4201B, P.O. Box 24, Rochester, NY 14292.

NEW PRODUCTS/MICROCOMPUTERS

Continued from page 78

Corp.'s VAX EDT mainframe editor. Features include multiple buffers, undo, keyboard redefinition, command macros, multiple file access, cut and paste, screen and/or keyboard command modes, command files and environmental variables.

System requirements are IBM PC-DOS 2 or higher and 128K bytes of memory.

PC/EDT is priced at \$220.

Boston Business Computing, 360 Morrisbank St., Lawrence, Mass. 01843.

Metafile Information Systems, Inc. has announced Metafile Multi-User, a multiuser software system for IBM Personal Computers and DOS 3.1 function call-compatible local-area networks.

Features of Metafile Multi-User include word processing, data base management, integrated text and data processing, windowing/forms creation, application development facilities and automatic and manual resource control.

A Metafile Network Access System is required for each workstation on the network, allowing it access to all the features and functions of the stand-alone Metafile workstation.

Metafile Multi-User and Network Access System require a minimum of 128K bytes of contiguous memory. Multi-User costs \$1,195, and each Network Access System costs \$395.

Metafile, 401 16th St. S.E., Rochester, Minn. 55904.

Systems

Gerber Systems Technology, Inc. has added the Sabre-PC to its Sabre-5000 family of workstations.

The Sabre-PC is an IBM Personal Computer-based, three-dimensional design system designed to support computer-aided manufacturing tasks. It is based on Micro Control Systems, Inc.'s Cadkey software system. It can be used as a stand-alone 3-D design station or can be integrated into local-area networks or clustered with modems and direct cables.

The full turnkey Sabre-PC system costs approximately \$20,000.

Gerber Systems Technology, 40 Gerber Road E., South Windsor, Conn. 06074.

Osborne Computer Corp. has introduced the Osborne 2000 PC-Kit, the Osborne 2100 and the Osborne AT.

The Osborne 2000 PC-Kit is an assemble-it-yourself IBM Personal Computer compatible consisting of a desktop personal computer-style case, power supply, keyboard and logic board with 64K bytes of random-access memory (RAM), serial port and built-in floppy controller.

The Osborne 2100 is a two-drive, 256K-byte RAM, Intel Corp. 8086-based computer with a color graphics card, built-in serial port and parallel port. The Osborne AT offers IBM Personal Computer AT compatibility. It has 512K bytes of RAM and a 1.2M-byte floppy disk drive.

The Osborne 2000 PC-Kit is priced at \$699. The Osborne 2100 is priced at \$1,595, and the Osborne AT is priced at \$2,595.

Osborne Computer, 63880 Chertsey St., Fremont, Calif. 94538.

Communications

Decidionlink, which is a division of Laguna Laboratories, Inc., has added Local & Remote 5251 to its series of IBM Personal Computer to IBM System/34, 36 and 38 communications products.

Local & Remote 5251 is a software package that provides 5251 emulation in a local cluster of up to six IBM Personal Computers and compatibles or via asynchronous remote communications.

RS-232 cables and standard serial asynchronous communications ports are used to link local Personal Computers to the server.

Decidionlink Local & Remote 5251 is available on a per-Personal-Computer basis for \$395.

Decidionlink, 1300 E. Normandy Place, Santa Ana, Calif. 92706.

Votrax, Inc. has announced micro-computer voice and sound circuit boards and software systems, the Votalker IB for the IBM Personal Computer and Personal Computer XT and Votalker AP for Apple Computer, Inc.'s Apple II, Apple Ix and Apple+ computers.

The synthetic speech generating systems each offer two preprogrammed voice modes. Text is generated by software translators through programs or computer keyboards.

Circuit boards include the SC-02 speech synthesis chip, speaker, audio amplifier, volume control, voice filter and switch and speaker jack.

Votalker IB costs \$249; Votalker AP sells for \$179. Prices include circuit board, software translator on a diskette and users manual.

Votrax, 1394 Hankin Road, Troy, Mich. 48063.

Storage

Kapak Design has announced the Novo Drive 1000, a 1M-byte equivalent to a hard disk for IBM Personal Computer XT's and compatible machines.

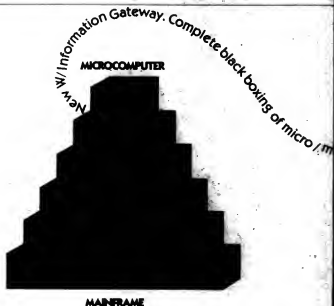
The Novo Drive 1000 was designed as an I/O device. This allows data to be transferred via direct memory access.

It also means that main memory is available for large programs and data files.

It is possible to boot up directly from the Novo Drive 1000. The drive can be physically transferred from one system to another without a loss of data.

The Novo Drive 1000 is priced at \$595.

Kapak Design, 18784 Cox Ave., Saratoga, Calif. 95070.



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You need software which has an integrated, layered architecture that supports increased application development productivity: from data acquisition to the delivery of information to upper management.

In short, you need Comshare's System W.

Our new W/Information Gateway™ software can turn an IBM PC XT® into an executive workstation with customized menus for direct access to information with a single keystroke. Our new W/Information Library™ on the mainframe automates

NEW PRODUCTS/MICROCOMPUTERS

Printers/plotters/peripherals

Epson America, Inc. has introduced the LQ-800 and the LQ-1000 24-pin dot matrix printers.

Both print in draft mode at 180 char./sec. and in letter-quality mode at 60 char./sec. They offer a resolution of 360 dot/in. horizontally and 180 dot/in. vertically. Both models come with built-in serial and parallel interfaces and friction paper feed. The LQ-800 accommodates 80-column width, and the LQ-1000 offers 136-column width.

The LQ-800 costs \$799, and the LQ-1000 is priced at \$995. Optional tractor and cut-sheet feeders for the LQ-800 cost \$49.95 and \$129.95, respectively. For the LQ-1000 they cost \$59.95 and \$169.95, respectively.

Epson America, 2780 Lomita Blvd., Torrance, Calif. 90505.

Nisabo Information Systems has introduced the NP-910 and the NP-918, two dot matrix printers.

The NP-2410 prints letter-quality text at 180 char./sec. and draft copy at up to 640 char./sec. The NP-910 prints letter quality at 88 char./sec. and draft quality at 350 char./sec. Both models use interchangeable RS-232 or Centronics Data Computer Corp. parallel interfaces.

The NP-2410 can emulate the Epson America, Inc. LQ-1600, and the NP-910 can emulate the IBM Graphics Printer and the Epson FX-100+ so they can operate with word processing and spreadsheet software, according to the vendor.

Model NP-2410 costs \$1,845. Model NP-910 is priced at \$1,595.

Nisabo Information Systems, Suite 105, 3838 Carson St., Torrance, Calif. 90505.

Controllers

Xyplex, Inc. has introduced versions of its host interface unit and cluster controller designed to add Ethernet compatibility to its family of communications subsystems for Digital Equipment Corp. VAX computer systems.

The host interface unit serves as the interface between the host computer and the Xyplex system's communications channel. It is a single board and supports up to 64 simultaneous terminal connections.

The cluster controller handles terminal data processing to the VAX. Each controller can support up to eight terminal connections.

The host interface unit and cluster

controller cost \$3,700 and \$2,575, respectively.

Xyplex, 100 Domino Drive, Concord, Mass. 01742.

Voice/data communications

Northern Telecom, Inc. has introduced the Meridian M2000, a digital telephone for use with the Meridian SL-1 integrated services network.

The Meridian M2000 has nine programmable keys for lines and features and can be programmed for four different rings. It can handle simultaneous digital voice and data transmissions at speeds up to 19.2K bit/sec. over standard telephone wiring.

The Meridian M2000 costs \$172. Northern Telecom, 200 Athens Way, Nashville, Tenn. 37228.

Protocol converters

Wizard Computer Products has introduced the Wizard Protocol Converter, designed to connect an IBM 3274 controller and Digital Equipment Corp. DecTalk voice synthesizer.

The combination of the protocol converter, DecTalk and a Touch-Tone phone allows users to add computer-generated voice output to sales data, financial information, customer service assistance and electronic mail.

The Wizard Protocol Converter and DecTalk units can be purchased as a package for \$5,500.

Wizard Computer Products, P.O. Box 1867, Greenville, S.C. 29602.

Multiplexers/modems

Teletenics Corp. has added the Expressdata 245 and the Expressdata 125 full-duplex modems to its Expressdata family.

The Expressdata 125 is a 1,200 bit/sec. external model modem that offers 1,200/300 bit/sec. data rate and can be upgraded to a 2,400 bit/sec. model. The 245 model has a 2,400/1,200/300 bit/sec. data rate. Both are Hayes Microcomputer Products, Inc. compatible. Other features include autosave, autodial, call monitoring, phone number storage and remote diagnostic over toll-free lines with synchronous or asynchronous transmission mode.

The Model 125 costs \$485, and the 245 is priced at \$695.

Teletenics, 805 E. Yorba Linda Blvd., Placentia, Calif. 92670.

A line of 3270 series multiplexers that operate transparently between the controller and end-user devices to support point-to-point, multidrop and star network configurations is available from Raycom Systems, Inc.

The multiplexers use one coaxial or fiber-optic cable to represent up to 32 coaxial cables conventionally used to link IBM 3274 and compatible controllers with Category A devices such as 3270 terminals, personal computers and printers.

Rack-mountable devices range in price from \$1,500 for an eight-channel coaxial multiplexer to \$3,245 for a fully configured 32-channel fiber-optic unit. Stand-alone units range from \$1,235 for an eight-channel device to \$2,195 for a 16-channel fiber-optic multiplexer.

Raycom Systems, 6395 Gunpark Drive, Boulder, Colo. 80301.



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NEW PRODUCTS/SYSTEMS & PERIPHERALS



Data storage

Bering Industries, Inc. has added the Series 8000-EP to its Series 8000 Winchester disk subsystems. The Series 8000-EP hard-disk subsystems offer capacities ranging from 65M to 180M bytes. The data transfer rate averages 700K bit/sec. The average access time is 30 msec. The EP line is fully compatible with Hewlett-Packard Co.'s hardware and software. Non-HP computers may interface with the Series 8000-EP by customized IEEE-488 device drivers.

The Series 8000-EP ranges from \$6,990 for a 65M-byte subsystem to \$11,890 for a 180M-byte subsystem. Bering Industries, 1400 Fulton Place, Fremont, Calif. 94539.

Keyword Office Technologies Ltd. has introduced modular disk drive configurations for the Keyword 7890 office automation hardware/software product that integrates incompatible word processing systems.

The Keyword system is now available as a single disk drive unit or with any combination of two, three or four disk drives. It performs single or two-way document exchange among 28 different incompatible systems such as Lanier Business Products, Inc. and IBM.

Prices range from \$3,795 for a one-drive configuration to \$9,500 for the four-drive system.

Keyword Office Technologies, 2815 11th St. N.E., Calgary, Alta. T2E 7S7.

Terminals

IBM has announced the IBM 3179 Model 2 color display station for use in 5250 Information Display Systems Networks.

The 3179 Model 2 is attachable to the IBM System/36 or System/38 either directly or through the IBM 5294 Remote Control Unit. It is plug compatible with the IBM 5292 Model 1 color display station and will execute application programs written for the IBM 5251, 5291, 5292 Model 1 or 3180 Model 2.

The 3179 Model 2 costs \$2,195. The annual minimum maintenance charge ranges from \$50 to \$94.

IBM, Old Orchard Road, Armonk, N.Y. 10504.

Liberty Electronics Co. has announced the Unilink Terminal that features Sperry Corp. UTS 30 terminal emulation.

The product also has a 14-in. display, detached keyboard, tilt-and-swivel pedestal, 10 programmable function keys as well as serial and parallel printer interfaces, according to the vendor.

The Unilink comes in two versions. One supports 80-column display formats with a green phosphor screen, and the other supports 132-column formats with an amber screen.

The 80-column format costs \$995, and the 132-column format is priced at \$1,095.

Liberty Electronics, 65 Third St., San Francisco, Calif. 94107.

Electrohome Ltd. has introduced the ECM 1901, a 19-in. color data display monitor for large computer-aided design and manufacturing applications.

The monitor offers brightness, contrast, horizontal and vertical hold, reduced scan, video on/off, horizontal frequency select and phase controls. It displays 1,100 by 800-pixel resolution at 25 kHz. It will accept a choice of red-blue-green RS170 or IBM's RGB TTL signals via an interchangeable module system.

The ECM 1901 costs \$2,160. Electrohome, 809 Wellington St. N., Kitchener, Ont. N2G 4J6.

Sperry Corp. has introduced the Sperry Video Terminal 1120 (SVT 1120) editing terminal.

Features of the SVT 1120 include a 14-in. screen, 132-col. display, two levels of menu-driven control pages, CRT saver for timed display shut-off, setup menus in six languages, keyboard-selectable national character sets, communications interface support for up to 19.2K bit/sec. and full-duplex asynchronous printer interface.

The SVT 1120 costs \$895. Sperry, P.O. Box 500, Blue Bell, Pa. 19424.

Carroll Touch has unveiled Smart-Y, an RS-232C serial splice controller for use with its Smart-Frame scanning infrared touch-input systems.

Smart-Y allows touch to be added to a terminal without introducing a serial splice within the terminal's electronics. Instead, the splice is done outside the terminal in an intelligent controller that splits touch data from terminal data.

In an environment where applications software runs on a host computer with multuser capability, Smart-Y allows data entered through the terminal keyboard and the touch system to share the RS-232C line to the host.

The single-quantity price is \$425. Carroll Touch, P.O. Box 1308, Round Rock, Texas 78680.

Datapoint Corp. has added the Model 8215 terminal, Model 8243 workstation and Models 8600 and 8390 keyboards to its Starship product line.

The terminal and workstation consist of a tilt-and-swivel, 14-in. monitor and an 80-char. by 24-line display. Two serial ports for processor and printer connections, an adjustable brightness control and a detachable keyboard are included.

The 8243 runs under the Datapoint DOS functioning as an interactive terminal and under RMS running applications programs written in any RMS-compatible language. It reportedly accommodates the two keyboards.

The 8215 terminal works with Datapoint's 32-bit microcomputer, the 3200, which runs an AT&T Unix-like operating system called Unix, according to the vendor.

Prices are \$1,295 for the 8242, \$599 for the 8215 and \$400 each for the 8600 and 8390.

Datapoint, 9725 Datapoint Drive, San Antonio, Texas 78284.

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NEW PRODUCTS/SYSTEMS & PERIPHERALS

Printers/plotters

Standard Register Co. has introduced the Buffer 1280 Label Laminator for supplying a clear plastic laminate over pressure-sensitive or other label products.

The Label Laminator runs at adjustable speeds from 30 to 120 ft/min. It is designed for roll feeding the laminate and pack feeding the label forms. It has an automatic sheet-label safety feature.

The Label Laminator is priced at \$4,495.

Standard Register, P.O. Box 1167, Dayton, Ohio 45401.

Bathhouse of America, Inc. has added a sheet feeder for Juhl Industries of America, Inc. printer models

5510 and 5530 to its line of Paperpro sheet feeders.

The Juhl model holds up to 80 sheets of paper. It is a mechanical unit and requires no software for operation.

Paperpro models range in price from \$395 to \$435 and come with a one-year warranty on all parts and labor.

Bathhouse of America, 103454 Brookwood Road, Dallas, Texas 75238.

Printmanager has introduced the Printmanager 128, a controlled switch and printer spooler.

Printmanager 128 is a software-controlled six-port switch and printer spooler that features a 128K-byte buffer to store outputs from up to

five CPUs. It transfers all data at 19.2K bit/sec. in and out simultaneously. Six-port models are available for four or five CPUs and one or two serial or parallel printers, and they can be cascaded for larger configurations.

The Printmanager 128 costs \$945. Printmanager, 105 Water St., Waverston, Mass. 02172.

Tektronix, Inc. has enhanced its 4510 rasterizer, calling the new product the 4510A Color Graphics Rasterizer.

Enhancements include support of the Tektronix 4605 copier as well as Tektronix 4100 command set features, including 32-bit coordinate space, segment transforms and multiple viewpoints. It new interfaces

with the 4110 series computer display terminals and 4120 series color graphics workstation.

The 4510A can be ordered with varying amounts of memory. With 128K bytes of memory, the price is \$4,495. With 512K bytes, the price is \$5,995, and with 2M bytes of memory, the price is \$9,995.

Tektronix, P.O. Box 1700, Beaverton, Ore. 97005.

Baxter, Inc. has added the 2700 and the 2705 to its 2000 series of reader/sorters.

The 2700 operates at speeds up to 1,500 documents per minute. It is available with up to 35 sort pockets and provides the capability to off-load post-sorted serial or account number files arising from larger systems. The 2705 combines the 2700 with an IBM 3090 emulation package that allows direct connection to any IBM 270, 3080, 3090, 3090 or 4300 series computer.

The 2700 reader/sorter, available in January, is priced at \$90,000. The 2705 will be available in June 1986 at a starting price of \$170,000.

Baxter, 6435 Spring Valley Road, Dallas, Texas 75244.

Infocrite, Inc. has introduced the Model 145X IBM-compatible dot matrix printer for multifunction applications with System/34, 35 and 36 and Personal Computer systems.

The printer provides both IBM twin-exit and standard parallel interfacing. It features an 18-wire pin print head that prints at speeds of 400 char./sec. in draft-quality mode, 300 char./sec. in correspondence mode and 80 char./sec. in near-letter-quality mode.

The Model 145X costs \$2,800. Infocrite, 1808 Michael Parady Drive, Boston, Va. 22090.

Palfon America, Inc. has introduced the DEX2100 and the DEX2200, two nine-wire dot matrix printers.

The DEX2100, 80 columns, and the DEX2200, 128 columns, both offer a 55-dpi color level, a print speed of 230 char./sec., built-in tractor feed, 11 languages, 16 ASCII characters and 32 international characters.

The DEX2100 is priced at \$545, and the DEX2200 is priced at \$695.

Palfon America, 3005 Orchard Drive, San Jose, Calif. 95134.

Desatproducts New England, Inc. has unveiled the TCG-302, an enhancement of its TCG-300 Tempest color graphics printer, to emulate the IBM color and IBM graphics printers.

The TCG-302 is a letter-quality dot matrix printer with 165 by 62.5 dot/in. resolution. It costs \$3,595.

Desatproducts New England, Barnes Park N., Wallingford, Conn. 06492.

Wallace Computer Services, Inc. is offering the Laser Max 40/60 on-line roll feeder and form folder for high-speed laser printers.

It works with various continuous-feed laser printers, including the IBM. Continued on page 52



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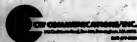


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NEW PRODUCTS/SYSTEMS & PERIPHERALS

Continued from page 86

3800. Printers can be used nonstop for up to five hours.

While printing occurs, Laser Max continuously monitors the paper path, checks all splices and, if a jam occurs, shuts down automatically. Using a photocell control, the form folder synchronizes with the printer.

The system costs approximately \$85,000.

Wallace Computer Services, 4600 Roosevelt Road, Hillside, Ill. 60162.

Graphics systems

Encore Technology, Inc. has announced Remaplex 6000, a computer-aided manufacturing system for the creation and maintenance of manufacturing engineering drawings and related shop floor documentation.

The system includes a complete hardware system with 768K bytes of memory, a color graphics console, a 15M-byte hard disk, a digitizing tablet and a dot matrix

printer, the vendor said.

The Encographics 3000 costs \$29,900.

Encore Technology, 12 O'Brien Road, Nashua, N.H. 03063.

Pericom, Inc. has added the MG 600 series to its Monterey family of monochrome graphics terminals.

The MG 600 offers 1,024-by-780-pixel noninterlaced resolution and a 15-in. screen. The MG 600 offers a 30-in. screen as well as a 132-column display and a video printer interface. The Flexible Graphics System is available on all models of the MG 600 series, and it supports features such as up to four screens of graphics storage and display, locally stored large vector lists and picture segments.

The MG 600 costs \$2,895, and the MG 620 is priced at \$3,995.

Pericom, Digital Drive, Novato, Calif. 94947.

Interactive Machines, Inc. has announced the IMI-800 Hybrid Graphics Mixer system.

The system features the IMI-300 mixer plus the IMI-466 stroke generator with hybrid monitor. It supports RS-343, RS-232 and RS-170A red-green-blue (RGB) input formats. It is available in one, two, three- or four-channel configurations. It offers 24-bit color monitors, and the hybrid monitor incorporates both random deflection for strokes and wideband RGB for raster.

The price of the IMI Hybrid System starts at \$31,500 for one channel. Additional channels cost \$16,000 each.

Interactive Machines, 733 Lakefield Road, Westlake Village, Calif. 91361.

Board-level devices

Systech Corp. has introduced its DCP-8900, a data communications processor, a four-channel, general-purpose communications processor on a single printed-circuit board.

The DCP-8900 enables Intel Corp. Multibus-based computer systems to operate in asynchronous, bi-directional, synchronous data link control, high-level data link control, X.25 and systems network architecture communications protocols. Other features include sockets for up to 64K bytes of erasable programmable memory, four multiprotocol serial communications channels and two dedicated direct memory access controllers.

The DCP-8900 costs less than \$2,000 in quantities of 100 or more.

Systech, 6465 Nancy Ridge Drive, San Diego, Calif. 92121.

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Protocol converters that allow ASCII terminals, personal computers, and printers to attach to the IBM 3270 network. Products like the popular RM-500 that allow virtually any ASCII printer to emulate the IBM 3287. And the RM-2000 that allows IBM 3270 terminals to be used in local area or public data networks. Micro-to-mainframe link products like Avatar's TURBO and MacMainframe that allow personal computers tied to IBM mainframes to share files with the host and capture selected data. Network controllers such as the powerful MPM6000 which form the hub for integrating the resources of IBM, Sperry, and ASCII devices. And even the connector products you need to tie everything together.

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COMPUTER INDUSTRY



INDUSTRY INSIGHT
Clifton Wilder
On Better Water

Comdex/Fall's high-tech party

There are few better places on earth to widen the gap between hype and reality than in Las Vegas, where everything from slot machines to 24-hour breakfasts served on floodlit hotel balconies constitutes an attempt to disorient the end user.

So it was here that trade show impresario Sheldon Adelson and his heady band of followers took center stage 10 days ago for the annual computer circus known as Comdex/Fall. And like a naive reader trying to find true Comdex news among the corporate press releases in the local Las Vegas press, a show observer could easily become confused between style and substance.

To cite just two unrelated examples, one of Comdex's most heavily hyped products, Microsoft Corp.'s Power Windows, was essentially a long-delayed new version in an attractively priced package. And the moderator of the most important conference session, Esther Dyson, had seen her ballyhooed *Computer Industry Daily* project fail just a few months ago.

In short, despite a general lack of earthshaking product introductions as well as fewer Comdex attendees, the microcomputer industry did not seem terribly serious about a long, hard look at itself. Certainly, there were exceptions. In well-delivered keynote speech, Hewlett-Packard Co.'s John Young called for an end to broken vendor promises, while session panelists like Northbrook Computers' Carlos M. Frum blamed industry woes on too many products that appear on the market with little regard for who will actually buy them.

See COMDEX page 102

Uccel moves to sell its computer services business

By Clifton Wilder

DALLAS — In an attempt to sever the remaining, unprofitable ties to its corporate origins, Uccel Corp. last week announced that it is negotiating to sell most of its computer services business to Besco & Wilcox Co., a New Orleans-based construction and utility equipment firm.

The companies hope to complete the sale by the end of the year. The divestiture would include virtually all of Uccel's time-sharing and remote processing computer services to approximately 400 customers in the electric power and energy fields.

When it was formerly known as University Computing Co., Uccel focused primarily in the services business. But a recent spate of purchases in the micro, mainframe systems and mainframe applications software industries has positioned Uccel as an aggressive player in the much more profitable software products market (CW, Nov. 4).

"Ever since [Chief Executive Officer Gregory J. Liemandt] took over, they have made it clear that their service business will not be part of their future," said analyst Charles Frumberg of Mabon, Nugent & Co. in New York. "I think they want to go into 1986 clean."

The businesses to be sold, all based in Dallas, accounted for only \$16.4 million of Uccel's \$145 million in revenue in the first nine months of 1985. Although service revenue was up slightly from \$14.3 million in the same period a year ago, Frumberg estimated that Uccel has lost about \$2 million in the service business this year.

"It's an operation that doesn't mesh with our strategic plans as stated when Greg Liemandt joined the company in April 1983," Uccel spokesman Richard Ranson said.

Uccel will continue to sell services running on its corporate data center's IBM

See UCCEL page 99

INSIDE

A recent survey found high-stakes computer mergers and acquisitions growing at a rapid rate/84

A French CAD software firm is flying high on the latest solid image modeling technology/192

INSTANT ANALYSIS

"We already have a name for the new company: NADW. It stands for Never a Dull Moment."

Convergent Technologies' President and CEO Paul C. Ely, Jr., on the new firm formed by Convergent's merger with 3Com Corp.

BUSINESS NOTES

Tandon gets IBM's Wilkie

Tandon Corp. has hired another prominent IBM employee to Chateworth, Calif., this time to receive the presidential mantle from company founder Sirjanz L. Tandon. Tandon, who will remain chairman and chief executive officer, named Dan E. Wilkie, president, chief operating officer and director. Wilkie had been site general manager at IBM's Personal Computer operation in Boca Raton, Fla., and had been with Big Blue for 16 years.

See BUSINESS page 102

Micro products flood industry

By James A. Martin

LAS VEGAS — Channel conflict exists within the personal computer industry because there are too many vendors attempting to sell similar products through a variety of distribution channels, according to a panel of computer retailers and vendors at Comdex/Fall '85.

Carlos M. Frum, president and founder of Northbrook Computers in Northbrook, Ill., said a flood of micro products has caused both customer confusion and tangled distribution. "There are too many products in the industry created without any regard to what the market needs," Frum said. There are too many vendors trying to do too many things. Board manufacturers are getting into the printer bus-

See MICRO page 102

IBM halts growth of its retail dealerships

By Clifton Wilder

Reflecting slackened demand for personal computers as well as increasing concern about unauthorized gray market distribution, IBM recently announced a freeze on authorized retail dealerships in the U.S. for an indefinite period.

The move caps authorized IBM outlets at about 2,500, but an estimated 2,900 stores sell at least some IBM equipment, according to a September 1985 survey by Richardson, Texas-based market research firm Future Computer, Inc. There are approximately 4,600 computer retail outlets nationwide, according to the survey.

"When we first announced the Personal Computer, we wanted to have enough dealers geographically within driving distance of our poten-

tial customers," said Jeannette Mahre, a spokeswoman for IBM's Entry Systems Division. "Our current locations now meet those requirements."

Although most IBM competitors interviewed at the Comdex/Fall '85 show in Las Vegas praised the dealer limit as "long overdue," the announcement could squeeze both independent dealers hoping to sell IBM hardware and large chains hoping to expand.

"I can't even fathom the difficulties of a chain where some stores are IBM and some don't," Future Computing Vice-President Alice Brown said. "How could you run a national ad campaign for prices on IBM products? The multilocation chains may have to reconsider their expansion plans. There should be an increase in

merger and acquisition activity rather than simple expansion."

"I think dealers feel strongly about IBM's lack of controls to date and its 'volume-at-all-costs' approach," according to John E. Boyd, sales vice-president of the Computer Systems Division of AT&T Information Systems. AT&T currently authorizes about 1,200 retail dealers.

John Frank, vice-president of marketing for Zenith Data Systems Corp., said he expected the IBM announcement but was pleased that it coincided with Zenith's plans to expand its own dealer network.

IBM said no new dealership applications were allowed to be filed after Nov. 18 but that dealers with outstanding applications or other exceptional situations could submit information until Dec. 6.

Hitachi to add U.S. plant

OKLAHOMA CITY — Hitachi Ltd. announced last week that it will begin manufacturing mainframe disk storage units at a \$8 million plant in Norman, Okla., in 1987.

The Japanese computer and electronics giant will form a U.S. subsidiary, Hitachi Computer Products America, Inc., to make the units. The plant may produce optical disk storage products in the future, Hitachi President Kazushige Miya said.

Separately, Hitachi announced an agreement with Sperry Corp. to explore mutually beneficial research and marketing ventures. Sperry will consider using Hitachi technology in its 1100 series systems and selling Hitachi peripherals on an OEM basis.

COMPUTER INDUSTRY

FCC proposal backed

Regionals approve Inquiry II revisions

By Bryan Wilkins
WASHINGTON, D.C.

The seven regional Bell holding companies enthusiastically endorsed the recently proposed revision of the Federal Communications Commission's Second Computer Inquiry rules separating enhanced services from basic telecommunications. By contrast, the major computer and telephone hardware associations said the regulatory regime does not need revision.

More than 90 parties filed comments by a recent deadline set by the FCC on its plans to loosen Computer Decision II separation guidelines to let market forces dictate when to apply

regulations. The FCC said that enforcing the barrier between enhanced services and basic telecommunications has resulted in a chilling effect on innovation, exemplified by vendors' failure to introduce voice-activated communications.

Significantly, the U.S. Department of Justice signaled its cautious approval of the FCC's proposed regulation, dubbed "Computer Inquiry III," calling it "an appropriate response" to changes in the market since the breakup of AT&T in January 1983.

The Computer and Business Equipment Manufacturers Association, the North American Telecommunications Association and the Computer and Communications Industry Association all said they oppose relaxing the regulatory separations of Computer Decision II.

By Clinton Wilder
FRENCHTOWN, N.J.

The value of mergers and acquisitions in the information industry in the first six months of 1986 more than doubled from the year-earlier period, according to the Cerberus Group, Inc.'s annual merger activity analysis.

The Cerberus Group reported that while the 102 corporate transactions whose financial terms were disclosed equaled approximately the same number (104) as in the first half of 1984, the value of those deals soared 110% from \$3.62 billion to \$7.94 billion.

Led by General Motors Corp.'s estimated \$5 billion buyout of Hughes Aircraft Co., the value of the industry's top seven "megadeals" (\$145 million or greater) in the period involved vendors of telecommunications equipment or services.

Perhaps the most significant of those was IBM's esti-

imated \$1 billion purchase of 16% of MCI Communications Corp., considered Big Blue's most aggressive move to date in its battle with AT&T.

Citing that historic agreement, the Cerberus Report said that IBM, AT&T and GM (with its 1984 purchase of Electronic Data Systems Corp.) can be considered "sovereign information states" — powerful, monopolistic corporations with more influence and more revenue than most nations. According to the report, such companies control the bulk of the most valuable commodity in today's economy — information.

"Information and wisdom have become the new high ground for our information society," Cerberus publisher

Charles C. Varga wrote in the report's introduction.

In the software and services business, the largest companies are increasingly dominating the market, according to Cerberus. Comparing full-year 1984 statistics with those of 1983, the number of firms with revenue of \$600 million or more grew from nine to 13, and the percentage of industry revenue accounted for by those firms jumped from 49.3% to a majority 60.1% (\$14.3 billion).

"Our industry's composition is changing," Varga said. "We see a threat in this change — the threat of a new form of imperialism, no longer based on acquisition of earth-bound territories but on acquisition of information."

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Telephone distributors to decrease

WASHINGTON, D.C. — The number of independent telephone distributors will be reduced drastically over the next two years as the interconnect industry goes through a period of retrenchment and consolidation, according to an independent distributors' trade group.

The North American Telecommunications Association said recently that its member firms are losing market share to the seven regional Bell holding companies and AT&T.

The association predicted that the independent market share will decline from 52.5% of annual aggregate customer premises equipment sales in 1984 to 45.3% in 1986 and 34.9% in 1989. Regional holding companies' sales will increase from 12.5% in 1984 to 16.7% in 1986 and 25.2% in 1989.

It also predicted that AT&T's share of sales will rise from 26.6% of the market in 1984 to 29.9% in 1986 and to 32.2% in 1989.

Total sales revenue for the independent interconnect industry, which peaked at \$3.9 billion in 1983, dropped to \$3.5 billion in 1984.

— Bryan Wilkins

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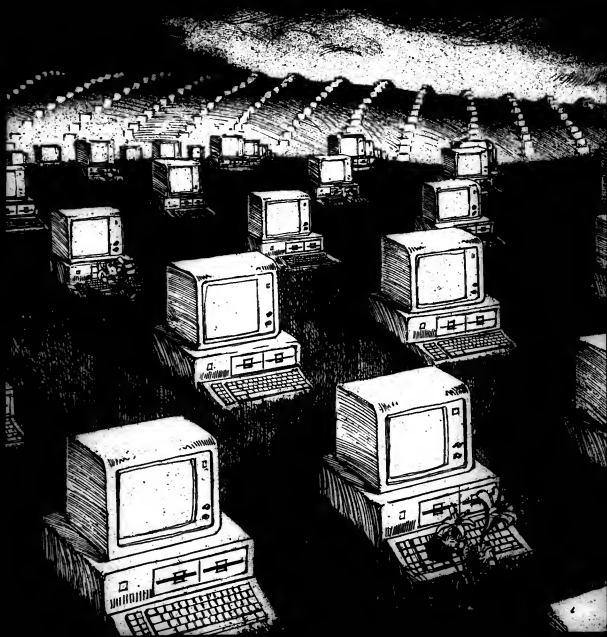
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COMPUTER INDUSTRY

Solids modeling shapes European CAD mart

Advantages cited over wire-frame technology

By Edward Wosner
Computerworld News Service

Blaise it on Pierre Bester.

A relatively unknown French mathematician, Bester developed the mathematical concept that made possible the modeling of solid images on a computer-aided design (CAD) system. European CAD vendors have since taken the lead in solids modeling, and now solids modeling technology is a hot item in what is otherwise a very cool U.S. market for CAD software.

A measure of the success that solids modeling is bringing to European CAD software vendors came at the Autofact '85 Conference and Exposition, the recent international factory automation trade show in Detroit. There, Matra Datavision, the U.S. subsidiary of the French electronics firm Matra S.A., announced a 76% increase in sales for its third quarter, giving it a 103% increase so far this year.

At that rate of sales increase, according to Vice-President of Eastern Operations John Olaszewski, Matra Datavision will at least match its 1984 revenue increase of 130% by the end of this year.

Though CAD was developed in the U.S., CAD software vendors in the

U.S. have suffered through the 1985 slump with layoffs, cutbacks and quarterly statements awash in red ink.

The difference, according to Olaszewski, is not due to the oft-cited sluggishness in the manufacturing sector but instead is due to the preference of manufacturers for the newer solids modeling technology over the wire-frame modeling technology that was pioneered by U.S. vendors.

U.S. vendors recognizing trend

Recognizing this, three U.S. CAD software vendors are marketing solids modeling software from either of two British firms, Shape Data, Ltd. or Interactive Data Systems. Other U.S. vendors have introduced solids modeling options for use with their mainline wire-frame CAD packages.

Solids modeling offers users several advantages over wire-frame modeling. In wire-frame modeling, a part is designed by connecting lines together at points; images drawn on wire-frame modeling systems show perspective but do not have solid walls.

"If I put a cylinder into a box [while using] a wire-frame [modeling package], the wire frame does not know there is a cylinder there," according to Bernard Jeffroy, Matra Datavision's vice-president for technical support.

Other solids modeling advantages,

Jeffroy said, include the ability to let users measure an image's volume and surface area, a particularly useful feature if the product under design is to be painted.

Matra unveiled option for Euclid

At Autofact '85, Matra introduced a leading-edge option for its Euclid solids modeling software that permits users to send a solid image directly from a Euclid CAD display to a programmable milling machine for production. The display-to-milling machine option, named Surfap, was developed over 10 years by the French automaker Renault and contains almost as many lines of code as Euclid itself. Surfap, priced in the \$80,000 to \$600,000 range, will reside as a module on the Euclid software, making it readily available for users who want to cut the time it takes to create a product or part, Jeffroy said.

Though several U.S. firms now market solids modeling options for their CAD packages, Matra's Olaszewski claimed his firm's 10-year-old Euclid program still holds an advantage in its ability to store all of its images in a central data base, something which most CAD packages do not offer. Olaszewski believes that in an era when manufacturers are seeking to centralize factory automation, central storage of CAD images may be almost as attractive as solids modeling itself.

Micro products flood industry

From page 93

ness and so forth. Because there are too many products, prices tumble and customers realize they can go directly to the manufacturer if they want. This creates too many channels and too many salesmen.

Part of the channel conflict can be attributed to what one retail executive called the "greedy growth rate" among vendors. "So many vendors want to get into a section of the business first and block others else out," according to M. Leonard Simon, regional president of Inacom Computer Centers, Inc. in Garden Grove, Calif.

Because of this, vendors often create more of a product than the market can support. "They've got to find a way to shove it into the market, and the way to do that is to open any channel of distribution they can," according to Bill Murto, vice-president of sales at Houston-based Compaq Computer Corp.

As a result, dealers are often saddled with more products than they can sell, which creates another industry problem: the gray market.

"Very large delivery orders can cause dealers to try and move some product sideways to unauthorized dealers," according to Bill Murphy, group marketing manager of Hewlett-Packard Co.'s personal computer group in Cupertino, Calif.

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Business notes: ADP acquisition

From page 93

Automatic Data Processing, Inc. aggressively increased its stake in the on-line financial services market by acquiring Bunker Ramo Information Systems from Allied-Signal, Inc. Terms of the acquisition were not disclosed.

Bunker Ramo, a Trumbull, Conn.-based terminal and services vendor, trails only Quotron Systems, Inc. in the stock quote information business with a 30% market share.

Reversing its earlier assurance to shareholders, Control Data Corp. omitted its fourth-quarter dividend of 16 cents per share of common stock. The omission was apparently part of CDC's negotiations with its creditor banks on debt restructuring.

With an estimated \$1.95 billion in sales, NEC Corp. slipped ahead of Texas Instruments, Inc. for the first time as the world's leading producer of nonvolatile semiconductors in 1985, according to Integrated Circuit Engineering Corp.'s annual industry report. Next on the list were Hitachi Ltd.; Matsushita Electric Ind. Co. Ltd.; Fujitsu Ltd.; Intel Corp.; and National Semiconductor Corp.

Comdex/Fall's high-tech party

From page 93

But the general tone of the show was sounded by the banner headline on the first edition of the official show daily, which proclaimed, "Industry Rebirth Begins Today." "Some who walked the show floor all day, including this reporter, must have missed it. But what other kind of self-aggrandizement would you expect from a trade show in which the 'lock note' speaker chairs a company producing no hardware or software, but public relations?"

Let's not be too hasty to criticize, however. Every industry deserves at least one occasion per year to come together, pat its collective self on the back and feel for at least four days

that the go-go days of yesterday—well, all of two years ago—are just around the corner. While no one is quite sure what 1986 will bring to the micro industry—except more IBM Personal Computer AT clones—we can be sure that there will be another great high-tech party on Nevada's most famous stretch of highway come November 1986.

Zenith Data Systems Corp. President Robert DiIwirth, whose firm has solved the IBM Personal Computer-compatible riddle better than most, was asked about the supposed hot topics at Comdex—local area networks, AT&T's Unix and the rumored IBM laptop model. DiIwirth broke into a grin under his mustache.

"Every year at Comdex we say networks, every year we say Unix, and we've been wrong for three years now," he said. "In our company, we're just going to keep moving boxes."

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COMPUTER INDUSTRY

Ashton-Tate posts 92% increase in third-quarter profits

Framework II, Dbase III credited

By Clayton White

Overcoming a sluggish industry with strong sales of its Dbase III and Framework II programs, Ashton-Tate recently reported a 92% increase in profits on the third quarter ended Oct. 31. Separately, Uccel Corp. reported that third-quarter income, before extraordinary credits, rose 7.5% from the like year-

earlier period.

Ashton-Tate, which recently moved its corporate headquarters from Culver City, Calif., to Torrance, Calif., reported sales of \$28.6 million, compared with \$24.7 million in the year-earlier quarter. Net earnings were \$4.5 million, or 49 cents per share, compared with \$2.5 million, or 27 cents per share, a year ago.

The 1984 figures exclude a one-time extraordinary gain of \$1 million, or 10 cents per share.

President and Chief Execu-

utive Officer Edward M. Eber Jr. said sales of Dbase III continued to be healthy, and initial shipments of Framework II have been well received in the marketplace.

International sales up

He said international sales have also increased. Ashton-Tate signed an agreement during the quarter with Brazilian firm Datalogica to have

Ashton-Tate products distributed in Brazil.

Ashton-Tate's sales for the first nine months of 1985 were \$80 million, up 45% from \$55.1 million in 1984.

Dallas-based Uccel reported that its profits for the third quarter ended Sept. 30 rose from \$8.1 million or 13 cents per share a year ago to \$2.3 million or 14 cents per share.

Income from operations, however, rose 58% from the year-earlier period, while earnings from investments dropped by 30%. Sales increased 18% from \$42.7 million to \$50.5 million.

A spokesman said the company's profits rose "significantly" during the period, despite a spending slowdown in the IBM mainframe software market.

House reviews market-opening measures

By Bryan Whitham

WASHINGTON, D.C. — The U.S. House of Representatives Energy and Commerce Committee recently sent to the House membership two far-reaching trade bills designed to open foreign markets to U.S. goods by threatening to bar entry of imports to the U.S.

The Trade Law Modernization Act (H.R. 3777) calls for a much stronger U.S. response to perceived foreign trade barriers and unfair export practices targeted at the U.S.

It is staunchly opposed by Reagan administration officials who argue that it promotes protectionism.

Greater presidential authority

The bill would give greater authority to the president to assess surcharges on imports that are determined to be subsidized by foreign govern-

ments before entering the U.S.

Additionally, the Department of Commerce would be authorized to take action against foreign governments using discriminatory protection practices and regulatory requirements.

Tough retaliatory measures also accompany the bill, which is expected to reach the full House for a vote next month.

A foreign firm would be barred from exporting to the U.S. if it were found to have violated fair trade laws three separate times within 10 years.

Law would require action

Additionally, the law strengthens Section 301 of the 1974 Trade Act by requiring a new administering authority to take action when foreign industrial targeting of specific markets

has been found to exist by the International Trade Commission or by the Commerce Department.

The second bill approved by the House Commerce Committee, the Telecommunications Trade Act of 1985 (H.R. 3151), would require the Reagan administration to determine whether unfair trade barriers exist in international telecommunications markets.

The Federal Communications Commission would be authorized to deny equipment approval and registration should a foreign country decline to loosen import restrictions.

U.S. Rep. Timothy Wirth, (D-Colo.), chairman of the House Telecommunications Subcommittee, said such provisions are needed because of the deteriorating U.S. balance of trade in telecommunications products.

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Data Processing Professionals

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Northrop DSO, as a leader in the electronics industry with annual sales in excess of \$250 million continues to grow to meet the needs of its customers. Outstanding opportunities are available to those professionals who aspire to participate in new developments utilizing the latest in on-line and data base technologies.

Our Environment utilizes an IBM 3081 running MVS and IMS, CICS command level and ADSO, COBOL.

We currently have positions available for individuals with the following backgrounds:

Systems Analyst Financial Applications

Candidates should have extensive systems development background, including 5 plus years experience with COBOL, VSAM, IMS, CICS or ADSO, and MVS. Heavy user contact. Should be familiar with the implementation of Cullinet general ledger or similar software packages. Degree or equivalent experience required. Exposure to INVALUET SYSD, Dynam/T systems methodology a plus.

Programmer Analyst Manufacturing Applications

Background should include 2 plus years data processing experience utilizing CICS, VSAM, COBOL, MVS, CICS or ADSO or LPLD in design, code, test, installation and support systems. Position involves user contact and requires good communications skills.

Programmer/Analyst Financial Applications

Positions require 3 or more years experience in financial programming applications utilizing VSAM, COBOL, MVS, CICS or ADSO with background in payroll/personnel package software. Will be involved in our MSA Payroll/Personnel Systems. Background in MSA, IMS, INVALUET, structural coding SYSD, Dynam/T and other financial systems such as general ledger, accounts payable/receivable a plus.

Northrop offers outstanding growth potential, a competitive starting salary and full range benefits package including tuition reimbursement, 401K savings plan, vacation plan, health/dental coverage and retirement program.

For immediate consideration, forward resume with salary requirements to Employment Representative M.S.M., Northrop Corporation, Defense Systems Division, 800 Victor Road, Bolling Meadows, IL 60008. We are an equal opportunity employer M/F/H/V. U.S. Citizenship Required.

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Data Processing Manager HP3000 — Southern Arizona

A 100% owned company located in Southern Arizona has an immediate opening for a Manager of Systems and Data Processing. The position is responsible for all data processing activities currently performed on a network of HP3000 computer systems. The ideal applicant will manage a staff of 15 technical, professional and management employees and be responsible for an operating budget of approximately \$1M per year.

Candidates must have a minimum of 5 years management experience in an HP3000 installation, applications development and programming responsibility and demonstrated ability to manage a professional staff. The position requires a person with excellent interpersonal and communications skills, and the ability to coordinate data processing activities with all management levels. An advanced degree and manufacturing experience is preferred.

The company offers a very competitive salary, broad benefits package and the opportunity to manage a state-of-the-art data processing installation. Interested and qualified candidates should submit resume and salary history in confidence to:

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Several proposals will be received by the CDCP, 301 N. Lamar St., 391 Building, Suite 105, Jackson, MS 39201 for the following data processing equipment and services:

Request for Proposal No. 1985, due Wednesday, December 11, 1985 at 2:00 p.m. for the acquisition of a Computer LOGIC-computer 1985 (see prior for the UNIVERSITY of SOUTHERN MISSISSIPPI).

Request for Proposal No. 1984, due Tuesday, December 17, 1985 at 2:00 p.m. for the acquisition of a computer system for the Florida County Prison Facility of the UNIVERSITY of SOUTHERN MISSISSIPPI.

Request for Proposal No. 1985, due Monday, December 23, 1985 at 2:00 p.m. for the acquisition of a multiprogramming computer for CONCORDIA UNIVERSITY.

Request for Proposal No. 1985, due Tuesday, December 10, 1985 at 2:00 p.m. for the acquisition of a text and communications processing and system control for the State of Mississippi of the UNIVERSITY of SOUTHERN MISSISSIPPI.

Request for Proposal No. 1987, due Tuesday, December 10, 1985 at 2:00 p.m. for the acquisition of a multiprogramming computer for the University of SOUTHERN MISSISSIPPI.

Request for Proposal No. 1986, due Tuesday, December 10, 1985 at 2:00 p.m. for the acquisition of a multiprogramming computer for the University of SOUTHERN MISSISSIPPI.

Request for Proposal No. 1985, due Tuesday, December 10, 1985 at 2:00 p.m. for the acquisition of a computer and data processing system for the University of SOUTHERN MISSISSIPPI.

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- All ads are standard in format and typeface. No special typeface, borders or logos are allowed. Copy may be up to 25 words per unit.
- The Bulletin Board ads are listed by manufacturer or by product type under appropriate headlines.
- Ads are set on a six-column page in our classified section under "The Bulletin Board".

How to Place an Ad in The Bulletin Board:

- We suggest you prepare your ad before contacting us. Here are some guidelines:
The first line is set in larger, bold type and should contain standard equipment identification. The body copy should describe the equipment and state the price. The closing should supply the seller's name and telephone number. This is all the information an interested buyer needs for follow up.
- Ads are accepted by mail, phone or by telecopier.
- Deadline is 7 days in advance of Monday issue.
- If you have never advertised with Computerworld, we request a check with your order.
- The Bulletin Board ads are not agency commissionable nor may they be applied to contract advertisers inch count.
- We assume no liability for errors beyond the price of the ad.

Here's the Address and Phone.

The Bulletin Board
Classified Advertising

Computerworld

Box 880

Framingham, MA 01701

Toll-free (800) 343-6474

(In Mass., call 617-879-0700) Please note our new 1986 prices. Effective with December 30, 1985 issue.

Published by CW Communications Inc., the world's leading publisher of computer related newspapers and magazines.



CW COMMUNICATIONS, INC.

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Computerworld's
Classified work.

News Note: Ad closing is every Friday, 10 days prior to issue date.
Business: Please be sure to specify the section you want: Time and Services, Software for Sales, Position Announcements and Buy/Sell/Lease. (Available upon request: Software Wanted, Real Estate, and others).

Display: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figures about 15 words to a column inch, not including headlines. Any special artwork should be enclosed with your ad also. Logos must be submitted on white bond paper for best reproduction.

Cost: Our rates are \$144.00 per column inch. (Each column is 1 1/31" wide.) Minimum size is two column inches (1 1/31" wide by 2" deep) and costs \$288.00 per insertion. Extra space is available in half-inch increments and costs \$72.00. Box numbers are \$15.00 extra per insertion.

Billing: If you're a first-time advertiser, (or if you have not established an account with us) we MUST HAVE YOUR PAYMENT IN ADVANCE, or a Purchase Order Number. Any extensions on this policy must be made through our Credit Department.

Issue Date:

Section:

Signature:

Name:

Company:

Title:

Address:

Telephone:

Send this form to:

**COMPUTERWORLD
CLASSIFIED ADVERTISING,**

575 Condit Road, Box 80,
Framingham, MA 01701

Foreign Editorial/ Sales Offices

Argentina: Ruben Argente, Gen. Mgr., Computeworld Argentina, Av. Belgrano 406-Piso 9, CP 1050 Buenos Aires. Phone: 34-9553/5584. Telex: 22544.

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Korea: H. Kiyama, Tokyo Representative Group, Sanyo Bldg. 3F, 2-10 Kanda Jinbo-cho, Chiyoda-ku, Tokyo 101. Phone: (03) 230-4117. Telex: 226800 (For all CWD publications except Computerworld Japan).

Mexico: Richard Small, Computeworld de Mexico, Decena 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (055) 514-4218, (055) 514-6308. Telex: 1771300 ACHAME, 1777808 ACHAME.

Norway: Mr. Martin Hansen, Gen. Mgr., CW Norge A/S, Høyveien 43, P.O. Box 2862, Torshov, Oslo B. Phone: 2-747725. Telex: (055) 7447725.

Saudi Arabia: Mr. Omar Doushi, General Manager, Saudi Computeworld, P.O. Box 5455, Jeddah. Phone: 6519800. Telex: (038) 401205.

Southwest Asia: Mr. David Haido, General Manager, Asia Computeworld Pte. Ltd., 11-08/11-10 Goshall Pass, Newton Road, Singapore. Phone: 250-4444. Telex: (785) 85 37003.

Singapore: Melvyn Bennett, Regional Sales Mgr., Asia Computeworld Pte. Ltd., 2023 Selegie Road, 9 Cornhill Rd., Canton, Hong Kong. Phone: 210396. Telex: (785) 72527 KQ COMWOP.

Spain: Neil Kohn, Computeworld/España, Barquillo 21, Madrid A. Phone: 231-23-85; 231-23-86; 231-23-88. Telex: 478944 CWD E.

Sweden: Bengt Marstrand, Nova Media AB, Sodra Hamngatan 22, S-115-41 Stockholm. Phone: 46-8-67-91-80. Telex: 14504 NONACW.

The Netherlands: Johannes A. Wivold, Mgr. CW, Computeworld Benelux, Van Eyckstraat 84, 1071 GX Amsterdam. Phone: 020-545426. Telex: (844) 18242.

West Germany: Eberhard Updekel, CW Publikationen, Friedrichsallee 31, 8000 Munich 40. Phone: (089) 36172-8. Telex: 5215350.

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A few smart reasons to buy our smart modem:

Features	Ven-Tel 1200 PLUS	Hayes
1200 and 300 baud, auto-dial, auto-answer	Yes	Yes
Compatible with "AT" command set	Yes	Yes
Can be used with CROSSTALK-XVI or Smartcom II software	Yes	Yes
Regulated DC power pack for cool, reliable operation	Yes	No
Eight indicator lights to display modem status	Yes	Yes
Speaker to monitor call progress	Yes	Yes
Attractive, compact aluminum case	Yes	Yes
Two built-in phone connectors	Yes	No
Compatible with The Source and Dow Jones News Retrieval	Yes	Yes
Unattended remote test capability	Yes	No
Phone cable included	Yes	Yes
Availability	Now	
Price	\$499	\$599

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